TACONIC HILLS
TECHNOLOGY PLAN
2005-2008

Draft: 5/23/05

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TABLE OF CONTENTS

OVERVIEW: Taconic Hills Central School District Profile

Geography

Taconic Hills Central School is located in the middle of the Hudson Valley, with the city of Hudson and the Hudson River to the west, the Massachusetts border to the east, Dutchess County to the south, Rensselaer County and the Capital Region to the north. Our school district provides a public school education and a common link for the ten towns that comprise the nearly 250 square mile southeastern [mostly rural] portion of Columbia County. At present, the county has one city, four incorporated villages and eighteen towns. European settlement of our county began in the late 1600's, with the Hudson River being the main conduit for travel and commerce. The city of Hudson served as a regional trade and manufacturing center for many years, through the mid 1900's. The remainder of Columbia County continues to be mostly rural.

Socio-Economic Conditions

Agriculture continues to be a key portion of our local commerce. Rather than one large, single employer, our county's economy is dominated by small and independent businesses, service organizations, tourism [as a result of easy access to our County by New York City, Massachusetts and Connecticut residents] and a real estate market with above average property values, in contrast with significantly below average incomes of the typical local household. Such above average property values are due to our proximity to New York City and the relative abundance of land. Many residents commute daily to jobs in Albany, Dutchess, Greene or Rensselaer Counties. Some others commute daily to Massachusetts or Connecticut, which border our county.

Many of our district's citizens have a primary residence elsewhere. The majority of students we serve come from low to mid-income households. Nearly 35 percent of our students qualify for free or reduced breakfast/lunch programs. Parents/guardians of most students we serve view education as a key to the future for their children.

Expectations for Education

Community expectations for public education have traditionally focused on offering its students a sound, basic education as cost-effectively and efficiently as possible, including an Advanced Placement program. In recent years, the Board of Education and Administration have placed increased focus on continuous program improvement and higher standards for students, staff and programs. The district offers a new state-of-the-art facility on a large, sprawling campus. This facility houses its own Performing Arts Center and a continuing education program for its adults.

Additionally, the district hosts partnerships with I.B.M, ARAMARK, SUNY Potsdam, and the College of St. Rose.

(Annual updates: http://www.taconichills.k12.ny.us/district/dprofile.html)

OVERVIEW: Executive Summary, Technology Plan 2005-8

Background

The Taconic Hills 2001-2005 Technology Plan brought the district's computer infrastructure (hardware, software, networking) to a reliable level of functioning in the move to the new building. Operating systems were split between Mac OS (Elementary and Middle School), and Windows 98 (High), which presented challenges to networking and applications integration. This move was accompanied by a substantial investment in technology infrastructure.

A secondary level move to Windows 2000 on the PC side, coupled with many other necessary security and performance upgrades, was the focus of regular district technology planning meetings. Dedication and self-education on the part of teacher specialists and administrators helped the district meet most 2001 plan objectives by 2005. From 2000-2004, extra-service positions for “IT Specialists” were used to address “break/fix” as well as instructional support needs. IT Specialist teachers offered professional development in-service courses to help faculty with network access, Internet resources and software tools.

From 2000-04 the district adopted student technology skills standards for grades K-6. These skills ranged from basic network operations and drill-and-practice software in Grades K-2, to keyboarding instruction and Microsoft Word in grades 3-4, advanced Word, Powerpoint and digital video in grades 5-6, and a full technology curriculum including Microsoft Office applications and Internet use at the middle level. Computer applications instructors taught these skills to students in computer labs.

Opportunity

As we enter the next phase of our technology planning, our infrastructure is able to support a high level of instructional technology integration. A bank of digital projectors are available for teacher use, classroom clusters providing a 1:4 students per computer ratio are being deployed, and the network infrastructure supports student work sharing, “Web quests” and other technology integration projects. Open computer labs are fully scheduled to provide 1:1 access at all levels. Videoconferencing is available from the classroom.

Moving forward, our focus needs to shift from providing tools to changing our vision of teaching and learning. To support that change, we must address the way we teach, learn, collaborate and evaluate our work.

Responding to organizational changes suggested by a performance review conducted on behalf of the district by IBM in 2002, the technology department was reorganized into separate technical and instructional support teams in 2003. However, budget constraints and other restructuring resulted in changes to this structure for the 2005-6 school year. Going forward, the district understands the importance of maintaining continuity, coordination and communication about instructional technology, without which the promise of our significant investments of time and resources cannot be realized equitably or deeply.

TECHNOLOGY PLAN PRIORITIES 2005-8: Highlights

1. **Provide the necessary leadership and professional development** to support the integration of technology into core subjects at all grade levels. All teachers will need to use instructional technology (see vision statements) to meet the educational needs of our students equitably. This commitment will require comprehensive professional development to bring teacher skills to baseline parity, identifying and promoting best practices through superintendent's conference days and other meetings. We must develop models of professional development and curriculum support that take into account the availability and workloads of our instructional staff.

2. **Adopt an instructional team-based approach to technology planning.** Because each grade level and subject area team will have different paths and priorities for technology integration, team leaders ("teacher specialists") are in an excellent position to guide technology planning at these levels, working with "IT specialists", school and district level staff to communicate goals, issues and needs through specialist meetings and team curriculum writing projects. This process began with the specialist team vision statements included in this document. Specialist teams are excellent forums for sharing technology integration project models and student work.

3. **Establish extra-service and full-time positions to meet the emerging needs of teachers for instructional technology support**. With the "break/fix" needs met by the technical support team, the roles of the IT Specialists need to change. IT Specialists will need to function not only as "just in time" technical support helpers, but as change agents to help their colleagues view instructional technology as an integral part of teaching and learning. The cost of failing to staff instructional technology support adequately will be a reversion to "early adopters only" effectively teaching with technology, maintaining a "digital divide" among faculty members which impacts students' equal opportunity to learn.

4. **Align computer applications instruction at all levels** (Unitary Plan Goal I Strategy I.3), and establish procedures for assessing the degree to which all students have met skills standards as they graduate from each of our three schools, and for providing remediation when appropriate. In 2003, a district-wide curriculum was adopted, and through internal assessments and focus discussions, targets for instructional professional development have been articulated. These discussions inform the strategies for professional development included in the district's 2003-2006 Unitary Plan (specifically, strategies 6.3 and 6.4).

GOALS: District Instructional Technology Vision Statement 2005-8

Information Literacy can be defined as identifying, evaluating, and using information effectively. Online multimedia information sources expand the range of available resources, increasing opportunities both for successful research and production, as well as for detours and diversions, depending on student skills. Building information literacy skills in all students is a crucial educational responsibility, both as a foundation for academic achievement in school and in preparation for life-long learning and problem solving. Developing an information-literate student body is the primary goal of instructional technology planning at Taconic Hills. We value information literacy and strive incorporate its precepts and skill sets into instruction across grade levels and curriculum areas.

Instructional technology can engage 21st century students and transform teaching and learning. Engaged learners take responsibility for their own learning, and employ a range of tools to investigate their culture, their history, their world and themselves. The power of instructional technology to reach beyond the school walls, and to craft with tools beyond paper and pen, is transforming learning in the following ways *(from Kozma and Johnson, 1991):*

1. **From reception to engagement**, as student actively construct knowledge through exploration, rather than receive it through dictation.
2. **From the classroom to the real world**, as research, communication, collaboration and production reach beyond the school walls.
3. **From text to multiple representations,** as images, sounds and movies are obtained, modified, created and shared by teachers and students.
4. **From coverage to mastery**, through drill and practice software that supports fluency, visualization and modeling programs for deep understanding, and production software that demonstrates and applies knowledge.
5. **From isolation to interconnection**, as students collaborate to learn in school using the same communication tools and modalities they are comfortable with at home.
6. **From products to process, as students** learn to use tools that facilitate authorship and scholarship, where the value of their work is heightened by publication for and recognition by their peers.

We envision a learning community at Taconic Hills that provides individualized, interactive access to information is available for all students and faculty, guidance and support for and from faculty, and a social context where computers are tools of scholarship, communication and creation. The creation of this context is fundamental: without it, teachers who want all students to be competent at core IT skills (keyboarding, critical thinking about Internet sources, etc.) must struggle individually against the student view of computers as toys and shopping malls. The following posting from an educational list serve highlights the issue:

> *"Many of my high schoolers get frustrated because I keep sending them back to the basics when all they want is the "good stuff" – i.e.; uncontrolled access to all of the toys. In the end some "get it" because they are able to see the benefits of learning the visual grammar and structures that good multimedia requires. Unfortunately there is also that attention span / "entertain me" mentality to overcome and cope with, reinforced by the television edu-tainment culture. In our pursuit of having these wonderful technologies increasingly integrated into all levels of education, I believe we must always ask, who is the master, and who is the servant? Too often, technology oversteps it bounds and becomes the dominant player."*
>
> *Peter French, Macromedia Education Leaders ListServe, 2005-03-17*

GOALS: District Instructional Technology Mission Statement For 2005-8

The mission of instructional technology integration in our district for 2005-2010 is to hire, develop and support teachers to create classrooms that:

1. **Address Higher Order Thinking:** Plan and implement technology-based learning activities that promote student engagement in analysis, synthesis, interpretation, and/or creation of original products.
2. **Differentiate Student Technology Use:** Plan for, implement and evaluate the management of student use of technology resources as part of classroom operations and in specialized instructional situations.
3. **Differentiate Instruction:** Implement a variety of instructional technology and grouping strategies to address different ability levels and learning styles..
4. **Build an Information Literate Community:** Make students think critically about the information that comes to them from websites, television and movies.
5. **Support Meta-cognition:** Guide students in applying self and peer assessment tools to critique student work and the process used to create it.
6. **Foster Community Connections:** Facilitate students' use of technology that addresses their social needs and cultural identity, and promotes interaction with the global community.
7. **Keep School Relevant:** Stimulate our students by creating a learning environment which is relevant to today's digital multimedia world, and where computers are meaningful learning tools for good scholarship and citizenship.
8. **Provide Equal Opportunities to Learn**: Appreciate the importance of providing equitable computer access and integration across grade levels and departments.

Targets for Instructional Technology Planning: 2005-6

1) Increase the proficiency levels of teachers.

In order to do this well, we need to assess the needs of everyone, those who have a basic level of understanding and those who are thirsting for more advanced technology applications. Only then can we individualize our staff development program so that it is worthwhile for all and meets the needs of our students. We need to develop a way to ensure that our teachers have a level of proficiency and that they incorporate it into the instructional program.

2) Establish measurable benchmarks for student computer use, K-12.

In order to do this, we will need to write a new technology plan (required by State Education Department) that includes a technology curriculum and assessment for students K-12. In order to do this effectively, we need to assess the needs of classroom teachers and content specialists to assist with a realistic plan for improvement.

3) Integrate technology into all aspects of the curriculum.

This is the ultimate goal, but it will have to be done in small steps, given the range of readiness among our faculty, whose professional development stages vary along the learning curve, from exploration to adoption, from adaptation to innovation. Teachers who feel comfortable with technology integration are leading the way, assisting others who are less independent and comfortable. Our professional development, technical support, collaborative discussion and supervision need to serve teachers at each stage of development, meeting their efforts to progress along the curve.

GOALS: TEACHER VISION QUESTIONS FOR INSTRUCTIONAL TECHNOLOGY: 2005

The district vision for technology integration derives significance from its authors. Rather than use vision statements developed by consultants, in 2004-5 the Technology Curriculum Coordinator met with all teacher specialist teams for subject areas and grade levels to brainstorm and offer suggestions for exploration. Notes from these meetings were then distributed to the teacher specialists, who were asked to work with their teams over the following month to develop 2-paragraph vision statements and 3 top priorities and needs for Instructional Technology (IT) for the following year. They were guided by the following questions:

- How can IT provide and support **engaging instructional practices?**
- How can IT provide **learning tasks** that are **authentic and multidisciplinary**?
- How can IT support **assessments** that are **performance-based**?
- How can IT support **contexts that are collaborative and productive**?
- How can IT support **differentiated instruction**?
- How can IT support **teacher roles as facilitators, guides, and co-learners**?
- How can IT support **student roles as explorers, teachers, and producers**?
- What **educational technology skills** will be a part of your curriculum and how will their use enhance and support your broader instructional goals?
- How will you **ensure equity of access to technology and engaged learning experiences** for all students in your team?
- How will your instructional use of technology **address mandates for curriculum standards, special needs students, and minority populations**?

The responses to these questions were formatted as **Teacher Specialist Team Vision Statements**, and also included top priorities and needs for the coming year. These vision statements follow, and have been integrated within the plan as appropriate.

TEACHER SPECIALIST TEAM VISION STATEMENTS

ART DEPARTMENT Technology Vision Statement

The secondary art department recognizes that technology is a student resource required by the New York State Standards for the Visual Arts. Internet research is included in our art history curriculum at each grade level. As teachers we use digital projectors, slide projects and CDs in our classrooms, integrating online images and teaching resources. Students learn to look at media critically, and use the web to access digitally created artwork, from still images to flash movies. They learn to see the links between the visual arts and technology in contemporary media and the tools and processes used to create them.

Digital production techniques are featured in our high school Advertising Design class, where students use Photoshop for graphic design, and a Photography course where students use PowerPoint as a presentation tool. We plan to do more with this as more computers and peripherals are available to our students. Projects we plan include scanning our slide collection and including it on a database, and exploring interdisciplinary links with other departments and technology (including ELA, where we hope to share visual images and writing across the curriculum.) We also would like to introduce a video unit in our advanced art classes, with the goal of expanding it to a semester class.

Priorities:

1. Professional Development: graphic and video editing software.
2. Equipment: video camcorders and video editing equipment. Color printer, scanners in middle and high school art rooms, digital cameras for secondary art department use.
3. Scheduling: Lab access available during Advertising Design class.

CAREER AND TECHNICAL EDUCATION Technology Vision Statement

The Career and Technical Education Department recognizes the role that computers may play in the educational setting. Until further research is conducted into the benefits of a comprehensive computer based learning model, the teachers in this department endorse the use of computers for specific tasks based on the needs of students and to facilitate instruction that is founded on New York State's Learning Standards and established curriculum.

The vision teachers in the department have for the next school year is closely parallel to what is taking place now. Teachers in computer classes will use stationary labs to teach computer applications and assist in research. Some teachers may elect to use computers in small cluster learning areas for individual and group work. Additional teachers will use the computer and peripherals as a part of the daily instruction plan.

Priorities:

1. Planning time – paid or scheduled
2. Additional computers for S176
3. Work tables for S176 and S180
4. Software for high school Family and Consumer Sciences classes

COMPENSATORY EDUCATION Vision for Technology Integration

Teachers involved with Title 1 who either team or co-teach will support and encourage the use of technology in the classrooms we support to help differentiate instruction. We can help teachers find and/or develop appropriate technology-rich lessons for their particular grade level. Some examples of technology in lessons we support are PowerPoint presentations, use of United Streaming video, drill-and-practice software for skill review such as Lightspan Achieve Now, and use of the Internet for research.

Teachers who provide direct services through Title I, as well as those who team or co-teach, will continue to explore new software and practices, to grow in our ability to use technology to provide effective instruction to our students and to serve as resources for our teachers.

ENGLISH DEPARTMENT Vision for Technology Integration

The English Department remains committed to helping students become better readers and writers. We recognize that on occasion technology can be a tool used to enhance instruction. For example, teachers use technology resources to access information that supports instructional effort. Some teachers design Webquests for students or use already designed Webquests, and some use the Internet for research. Also, some teach lessons using technology resources such as Microsoft Powerpoint. Some teachers use software such as GradeQuick that supports administrative tasks, and some teachers use software that supports learning, such as Accelerated Reader, Microsoft Publisher and Powerpoint, and Microsoft Word.

Our students use technology resources to access information that supports instructional effort. Some students use PCs to look up the meaning of words, Noodletools to write bibliographies, Hotlists for guided research, and databases for research. Students also use software that supports learning. Some students use Microsoft Publisher to make brochures and/or pamphlets, Microsoft Word to word process, edit and import graphics, and Microsoft Powerpoint for student projects. Presently, we primarily use rubrics, self-evaluation and peer feedback to assess student learning and performance that takes place. In the future, teachers will explore Blogs and BBS for journaling, and Accelerated Reader to supplement reading instruction.

Priorities

1) We need technology teachers to teach computer skills to students.
2) We need newer computers.
3) We are concerned about the allocation of instructional time for multimedia presentations.

LIBRARY MEDIA PROGRAM Technology Vision Statement

Library/Media Specialists at Taconic Hills have traditionally been on the forefront of technology collaboration, integration, and instruction. The three specialists, now aligned with the school structure of elementary, middle, and high school, work closely with their faculty to develop lessons that utilize technology in noteworthy ways while supporting NYS teaching and learning standards. According to the IBM Performance Review: “In our research we discovered that THCSD’s library staff provides significant technology services to teachers” (p. 54).

Information literacy skills, as taught by library/media specialists, and information problem solving are the very heart of the NYS Standards in all disciplines. The information problem solving skills

we teach, informed by the BIG 6, are universal, lending themselves to all curricular areas, interdisciplinary studies, and empower students to be lifelong learners. It is our belief that the information literacy skills we stress create a platform for understanding the world around the learner and provide a solid foundation for all future learning. In the following years, we will continue our significant technology services, coupled with our traditional role as promoters of books and materials related to reading and literature.

Priorities

1) Continue and expand collaborative work with classroom teachers, utilizing the Research Binder developed in conjunction with Bob Fulmer.
2) Acquire at least 6 computers in the elementary library for small group instruction, thereby freeing up the library lab for larger groups.
3) Establish a baseline configuration for secondary library computers that includes hard drive space, memory and processing speed to run the advanced software (Publisher, Dreamweaver, and Photoshop for example) students use in all other classes. Students use the library to work on projects and assignments during and after school, and need to have their software available on whatever machines are free.
4) The Library Web Page needs to be redesigned to better showcase the services we offer and to increase accessibility to databases. It is our goal to make the library page the first stop for students solving an information problem (which is everything they do!).

LOTE 7-12 DEPARTMENT Technology Vision Statement

LOTE 7-12 envisions the use of TV/VGA connectors and/or LCD projectors to share students' work with classmates and to make use of internet web sites as a connection to current realia (literacy events like ads, menus, etc.) in the cultures of our languages. We encourage students to make use of their Powerpoint skills to do the occasional presentation. Most of the LOTE teachers have training in the creation and use of Web Quests, and we would like to see students use these as research tools.

A tutorial software program such as "Rosetta Stone" could be used to differentiate instruction in all four skill areas – speaking, listening, reading, and writing. We also see it as an excellent tool for individual practice and review. Some, although not all, teachers will be using video conferencing and video streaming as a way of engaging their students in meaningful, authentic language situations.

Priorities

1. Continued training and assistance in creation of Web Quests,
2. Purchase of tutorial software such as: "The Rosetta Stone" for a large group (30),
3. Access to computer lab for entire class to use Web Quests and software.

MATHEMATICS DEPARTMENT Technology Vision Statement

The use of technology is a non-negotiable issue for Mathematics classes in the 21st Century. The New York State Education Department recommends the exploration of graphing calculators at the Middle School level and requires their use on the High School level. Taconic Hills is well on the way to reaching the goal of a graphing calculator in the hands of every student with our loan program to supplement private purchases. Each teacher in the High School has a view screen available to them to model concepts for the entire class. Every unit in the curriculum will attempt to incorporate the appropriate use of the graphing calculator.

The biggest obstacle facing Taconic Hills Mathematics teachers is time. Technological advances in hardware and software occur at an astounding rate. Mathematics teachers need to be competent in both calculator and computer technology to provide a sound education for students. This requires the weekly allocation of time over and above their allotted preparation periods. At least one period per week needs to be allocated for this purpose.

Priorities

1. Professional planning time at least once each week as stated above.
2. Equipment
   a. Projectors for every math classroom.
   b. Class sets of graphing calculators for all middle school and high school classrooms.
3. At least 10 laptop computers for class use.

MUSIC DEPARTMENT Technology Vision Statement

At the elementary level, we recognize a need for teacher training to increase our comfort level and familiarity with computer and audio-visual technology to support age-appropriate learning in the music classroom. We envision the use of video recording equipment to assist students with self-assessment of performance skills. We will make contact with other schools, BOCES, and State Education to determine what guidelines and workable solutions exist for the use of software in music education to investigate their successes, and send a representative to a an appropriate conference for music educators.

Our secondary team has integrated a variety of software for music theory and performance instruction this year. Sibelius translates “Flexi-time” keyboard input to printable, editable scores. Band-In-A-Box helps students perform, compose, improvise with computer-generated accompaniments to popular and classical repertoire. We also envision the use of digital video to evaluate student performance.

Priorities

1. To meet our professional development goals, we need to secure paid time for technology training.
2. To meet our instructional goals reliably, we need to understand the most efficient process for having software and hardware available to us in our teaching-learning area, and establish effective lines of communication with staff responsible for maintaining, updating, troubleshooting, hardware and relevant software.
3. We request a printer and scanner for the PC in room S154F to use to print score parts, scales, drills as needed, rather than require the purchase of new sets of music when only one part has been lost.

SCIENCE DEPARTMENT Technology Vision Statement

The science department's vision is to increase our integration of technology in two basic areas. Our first goal is to apply more technology use to data collection and analysis. We propose doing this by using probes to collect data and graphing programs to plot and analyze that data.

The second component of our vision is to use computer generated visuals to present processes and concepts. To make this component user friendly, we would like to set up a web site database we can contribute to and access that provides what we consider the most complete and appropriate web sites for use in our classrooms. Along with the site references would be suggested grade levels and areas of use.

Priorities

1. Software Purchases: graphing programs to be identified
2. Hardware Purchases: ten laptop computers with field probes.
3. Training for science faculty to use probes and data analysis software.

SPECIAL EDUCATION DEPARTMENT Technology Vision Statement

The teachers in the special education department view student access to curriculum as the highest priority need for the students at Taconic Hills. It is most important for students to be able to use the same resources as the general education population and ideally use these materials independently. This would create the truly level playing field that is a primary goal of special education. Students in a classroom could **all** work on achieving standards and goals with the appropriate technology provided as per individual IEPs.

In order to accomplish this goal, teachers would like to see all of the required reading be converted to Cds or ideally MP3 files. This way students could complete assignments anywhere in the school building and even at home in many cases. In addition, students need to be able to use speech to text software to complete writing assignments. This would require the classrooms with special education students to have Dragon Naturally Speaking or similar software. Finally software (screen reader) that allows students to use the Internet for research or complete worksheets/tests independently should be available to all special education students that currently require someone to read to them.

A second area of high need is to modify our current bank of IEP goals and objectives in order to insure that they are all measurable. This would ensure compliance with Federal Law and ultimately make the IEP process less time consuming next school year. This could best be accomplished through a summer 2005 retreat.

Priorities

1. Textbooks and novels on Cds or MP3 files.
2. Use Speech to Text software such as Dragon Naturally Speaking
3. Obtain Screen reading software such as Kurzweill.
4. Updating IEP goal banks on Cleartrack.
5. Develop a bank of teacher worksheets on the common drive for easy modification
6. Obtain training in Webquests and PowerPoint, with time to prepare projects for class.
7. Set aside time to work with LightSpan materials for use with our students.

SOCIAL STUDIES DEPARTMENT Technology Vision Statement

The Social Studies department embraces the availability of technology for teaching and learning. All of our teachers use Gradequick for attendance. Many also use it as their grading program. Digital projectors are used to show Powerpoint notes, lesson materials, curriculum related images and video streaming to facilitate student understanding.

Our department uses a multimedia approach to instruction to enhance learning and retention of material. Many of our teachers use Powerpoint for classroom presentations and student multimedia projects that enhance knowledge and interest. Webquests are designed to help students gain knowledge, build critical thinking skills, and evaluate online resources. Our vision for next year is that all members of the department will continue or begin to use technology to present creative interesting lessons.

Priorities

1. Design and participate in joint curriculum writing projects for the summer
2. Establish a weekly joint planning period
3. Use computer clusters in all rooms.
4. Obtain ceiling mounts for digital projectors in each social studies room if possible. Plugging and unplugging carts and cords are distracting and potentially dangerous.

KINDERGARTEN Technology Vision Statement

Our students will learn basic computer terms necessary to receive basic instruction in the lab setting, such as “keyboard”, “desktop”, etc, and demonstrate a functional understanding of and ability to log on and off independently to access the programs of Taconic Hills. Students will also demonstrate basic knowledge of keyboard (shift for capital letters, space bar, return key, tab key, etc.) and the ability to save work into their individual file folders.

Drill and practice software (such as A-Zap), production software (such as Kid Pix) and online content (such as Starfall.com) will be used to build and reinforce curriculum standards. The students will generate and produce hard copies of assignments reflecting the achievement of these skills. To enable our team to use computers to supplement curriculum, Kindergarten classes should begin working in the lab in November, rather than delaying until late Winter. Network use agreement paperwork should be distributed at Kindergarten orientation in order to be signed and returned in a timely fashion.

Priorities

1. Furniture: Chairs/Tables for Clusters of five workstations in each room.
2. Networking: Computer cluster hook ups for power and data.
3. Software on all workstations: Bailey’s Bookhouse, Millies Math House. Reader Rabbit, Dr. Seuss.

1st GRADE Technology Vision Statement

The first grade team values technology as an educational resource for our teaching and our students. Our vision for the upcoming school year is to continue with the Primary Lab instructional schedule and activities that we have already established to introduce students to

basic tasks and begin drill and practice. Some of the tasks and activities we currently emphasize in the lab include: Logging on, Saving files, Creating a folder, Word processing, Awareness of letter/symbol placement, Inserting/ejecting a CD ROM, Activating a CD ROM and Language Arts/Math Games.

Some members of the First Grade team are exploring the use of computer clusters in our classrooms running drill and practice games for enhancement, reward or remediation. If clusters turn out to be a great benefit to our students, we will seek additional computers to extend their use to all first grade classrooms.

Priorities

1. We need a technology teacher to teach technology
2. We need more language arts/math software
3. Some teachers may need/want more computers for their classrooms

2nd GRADE Technology Vision Statement

The second grade team will continue to incorporate technology within the classroom, as well as the lab to intensify learning based on the NYS standards. Computers will be used as a tool for instruction, research, and motivation. Technology will be used as an instrument for differentiated instruction to reach the diverse learning styles of all students.

Our vision for next year and beyond will include using the lab for computer-focused instruction at the start of the school year to assist students in becoming familiar with and proficient in using the computer independently. In both the lab and our classrooms, we will spend that time and the remainder of the school year using Microsoft Word, Internet Explorer, Student Writing Center, Print Shop Deluxe and other quality learning tools to integrate technology into our curriculum. Thus enhancing the learning experience of all our students.

Priorities

1. Outline potential uses for classroom clusters and complete the installation of clusters in each second grade room.
2. Work collaboratively as a grade level team to develop and implement a plan for increasing student computer skills with a focus on grade 2 curricular areas and horizontal alignment.
3. Continue teacher training to assist both educators and students in becoming more proficient and confident in computer use.

3rd GRADE Technology Vision Statement

The third grade team believes in the power the Internet to provide virtual experiences and supplemental information that reinforce everyday learning opportunities in content areas (e.g. Science and Social Studies). Our students currently use scheduled lab classes to acquire the basic work skills to use computers for learning such as logging in, keyboarding (minimum standard of 5 WPM), saving files, copying and pasting, and saving information they create and find on the Internet to their network folders. We will continue to set aside time for our students to develop these skills, working in the computer lab, library lab or classroom cluster.

We envision a fixed year-long drill and practice curriculum to address technology skills standards, with classroom integration projects that apply these skills to content area standards. .

Work our students currently produce includes digital images in KidPix and word processing / desktop publishing documents with Student Publishing Center. As we will eventually move to the Windows platform, we intend to replace these applications with Microsoft Word and Powerpoint. Tom Snyder's "Scholastic Keys" software provides an easy interface for Third Graders to get to know Microsoft applications, and has been evaluated by IT specialists.

We believe our students are ready to begin to question the relevance of online information for research (pre-selected for reading level), and to produce work which distinguishes between found information and the students' own words. We will design research projects that help them begin to develop the critical thinking skills necessary to use the Internet for academic success. In order to accomplish these goals, we will design these activities in collaboration with a computer teacher who can pace and modify student skill development in scheduled lab classes as required.

Priorities

1. Hire a computer teacher for applications instruction and adaptation of a skills curriculum for primary grades. Regular classroom teachers may lack the training and expertise to be effective at this.
2. Continue the Type to Learn program in the lab staffed by a trained teaching assistant.
3. Convert Primary lab to Windows Machines and install Tom Snyder's Scholastic Keys software to introduce students to Microsoft Word and Powerpoint.

4th GRADE Technology Vision Statement

The fourth grade team believes that technology can support an interdisciplinary approach to the NYS learning standards while also meeting the diverse needs of our student population. We will focus on differentiating instruction with technology, and developing student multimedia projects that use the Internet and authoring tools to synthesize and apply learning across disciplines. In order to accomplish these goals, we will continue to develop core student technology skills in co-planning with our computer lab instructor, reinforcing and applying these skills in classroom instruction and activities.

Currently students receive instruction on keyboarding, word processing, Power Point, graphic applications, and information gathering using the Internet from a certified computer technology teacher in a 1:1 lab setting. This develops baseline student skill levels needed to effectively and productively use the technology in the classroom in the following ways:

1. Power Point for presentations that introduce, extend, and summarize learning objectives
2. Word Processing with digital images for illustrated essays, newsletters, etc.
3. Internet-based learning experiences such as Virtual Field Trips and Webquests to develop higher order thinking skills in analysis and interpretation of information.

We also differentiate instruction with multimedia presentations to the class using digital projectors, and provide student access for AIS skill-building in the following ways:

1. Internet-based skill-building software such as Kids College
2. Educational games via Playstation-based Lightspan software for Math Skills
3. Interactive math websites which prepare students for NYS tests by providing explanations of answers, and reinforcing test taking strategies.

5TH GRADE Technology Vision Statement

The fifth grade team is committed to using technology in the existing curriculum by applying skills learned from a certified computer technology teacher in computer technology class. The teachers will use technology to facilitate alignment of the NYS standards. This technology will be integrated into the curriculum according to students' individual needs. Technology will support the fifth grade curriculum through the use of word processing skills, Internet use, Powerpoint and Excel.

Our vision for what instructional technology integration will look like in our room next year is similar to what is already in place. Teachers will use technology such as Powerpoint and websites to differentiate instruction and provide learning activities for students that address varying learning styles and abilities. The Internet will also be used for research by students and teachers for instructional purposes as well as for assessment.

Priorities

1. Complete cluster installations in all classrooms to assist in AIS drill and practice;
2. Continue teacher training to assist students in projects as well as teacher motivation; and
3. Continue to have access to a certified teacher staffed computer lab to learn and create.

6th GRADE Technology Vision Statement

The sixth grade team will continue to value the use of technology within the classroom to enhance the teaching of the NYS standards while appealing to the unique and diverse needs of all of our students. Our students enjoy working with computer tools, and this deepens their connection to subject matter.

We will continue to collaborate with our computer/technology teacher and our Library/Media Specialist in the design of Webquests, Powerpoint presentations, Excel Spreadsheets, and other project activities for classroom cluster and lab settings that engage students actively with Internet research and multimedia production. We will integrate the teaching of search engine use and critical thinking about online resources when appropriate.

Supporting the development of skills in ELA and Math in AIS activities, we will use the Lightspan Achieve Now drill-and-practice software in the classroom with Sony Playstations, in conjunction with displaying the software with digital projectors to help all students learn to use the software well for enrichment, and to aid in classroom introduction of new topics in these areas. We will also make use of available keyboarding reinforcement (Type to Learn in the lab, as well as Alphasmarts if portable carts are available) to make sure our students are not limited in their ability to word process by their typing speed. We will focus on the development of word processing skills as students compose longer essays and creative pieces.

Priorities:

1. Developing an access plan and schedule for keyboarding reinforcement
2. Participate actively in district technology planning regarding computer staffing
3. Work collaboratively as a grade level team to develop and implement webquests and other projects as a group.

HARDWARE AND INFRASTRUCTURE: Status and Upgrade Plans

Hardware and Infrastructure Planning Goals

- Assure that appropriate computing resources are available to all students.
- Assure that each faculty and staff member who uses computing resources in his or her position has a computer of sufficient capability to fulfill his/her responsibilities;
- Implement minimum standards for computing equipment and promote uniformity of technology.
- Provide for the cost effective and timely purchasing.

Workstations: Status and Replacement Plan

The district has 800 computers for instructional and staff spread over grades K-12 and office levels. The district continues to support a mixed Windows (NT) and Macintosh environment. All computers are networked, have access to the Internet, and are capable of running multimedia CD-ROMs. The majority run a Windows 2000 operating system and a minority run Mac OS 9.X (primarily in the Elementary School). All machines on the district network are equipped with Microsoft Office suite and Adobe Acrobat Reader. The standard web browser is the latest version Internet Explorer.

Going forward, the district seeks to upgrade Windows 2000 stations to Windows XP or later operating systems, to improve security and performance. We will also continue to reduce the number of MAC-based systems on the network, until they can be replaced entirely with Windows-based machines.

There are 416 Computers in high use instructional areas. Out of these 416, 65 computers are 3 years old or less, 30 are 5 yrs old and 321 are 6-7 yrs old. Given this installed base, a replacement of 110 new computers each year is proposed for 2005-2008. Redeployments will occur in computer labs and other areas where multiple machines are shared. As these deployments occur, displaced existing machines will re-deployed according to need or surplussed.

Network: Status and Upgrade Plan

The district network infrastructure is a switched, 100Mb backbone with switched 10/100Mb connections from all computers. A replacement and upgrade plan will be implemented in 2005 with the core switch upgraded to a 1000MB switch. This will allow the new servers to take full advantage of 100/1000MB network interfaces.

1) Replace each 10/100 fiber switch in the 8 wiring closets with 100/1000 fiber switches.
2) Add and /or replace battery backups in each wiring closet attached to switches.
3) Have climate controlled wiring closets by installation of air exchangers or air conditioning.
4) Replace Firewall with new CISCO 515e.
5) Implement wireless networking where appropriate.
6) Replace 2-3 servers per year.

HARDWARE AND INFRASTRUCTURE: Maintenance and Tech Support Staff

The district's Network Support department is comprised of staff contracted through the North East Regional Information Center (NERIC), online at http://www.neric.org. This arrangement provides backup support at all levels of expertise, as well as state aid for cooperative service agreements. The department is currently staffed as follows:

1. Network Administrator (4 days a week)
2. Network Assistant (4 days a week)
3. Desktop Administrator (2 days a week)

Staffing levels will continue to be re-evaluated, in order to supporting increased availability of technology into all phases of office operations as well classrooms. Current and projected increases in staffing demands include a near-doubling of workstations between 2003 and 2005.

Business and industry use the support model of 1 network support person for every 100 networked computers. This model is not affordable in a K-12 school district; nevertheless, the requirements for support are just as critical. In order to address this gap, the department will continue to research, evaluate, develop and deploy state-of-the-art tools for remote administration and configuration, to assist in managing the network and the desktop computers with minimal time spent traveling between schools. Remote administration tools have assisted the department over the past year greatly in enhancing technical support time response.

Because remote administration means less face-to-face contact between technical support staff and instructional staff, greater reliance on two-way online communication is required to ensure that necessary information about system status, support needs and tracking of upgrade and repair orders is exchanged in a timely and efficient manner. From 2003-2005, the department moved from a paper-based "Technology Department Work Request" model to emails for repair orders, and is in the process of implementing a web-based work order management system where users and support staff will be able to log, prioritize, assign, track and reference requests and responses.

In addition to these strategies, the Tech Support department will continue to coordinate with instructional staff to explore other communication technologies and strategies that keep users informed about system status, work request timing, and other information critical to the success of the educational process. However, there is a limit to the amount of face-to-face interaction that can be effectively substituted by electronic means, particularly in a district where levels of comfort and skill with computing vary widely among staff, and where those most likely to require assistance may be least likely to use electronic communication effectively.

To maintain a level of support that ensures the effective management and support of our hardware and network infrastructure to meet current and projected increases in needs, the Network Support Department recommends a modest increase of staffing hours as follows:

1. Network Administrator (5 days a week)
2. Network Assistant (5 days a week)
3. Desktop Administrator (4 days a week)

HARDWARE AND INFRASTRUCTURE: Website And Network Management

Web Development

The district purchased IBM Learning Village in 2002 to provide a vehicle for teachers to communicate with parents via the design of dynamic web pages. After devoting a Superintendents Conference Day to Learning Village in 2003, results are mixed – most teachers have a site, but few update it regularly with homework assignments, resources and calendar information. Those that have tried to move beyond "home pages" to websites for their courses (or for Webquest projects) run in to the difficulties of designing in the Learning Village environment, which is not designed for multi-page websites.

Other features of Learning Village like Team Projects were not attempted (except for one pilot project, http://www.taconichills.k12.ny.us/middleschool/projects/scep/index.html - though the results were very positive), partially because the benefits of creating online conversations are not widely known, and because of the comparative difficulty and limitation of Team Projects compared with more current BBS technologies teachers are familiar with for their own use. Similarly, the use of Learning Village for student-created home pages has not been tried, save for that pilot project. Finally, we found it easier to mount our curriculum standards on our static website, rather than work within Learning Village's database.

Should the district wish to explore web publishing options beside Learning Village, more current and easy-to-use technologies exist where teachers can develop course sites beyond simple "home pages." These include:

1) Macromedia Contribute for teacher-designed websites
2) Macromedia Contribute for student-designed websites
3) Blackboard for project development and peer review bulletin boards
4) Blackboard for student bulletin board discussion and short-term email

Through Contribute, a web master can assign privileges to different types of users (such as the ability to post online directly, submit pages for review before posting, or work only within set templates). Through Blackboard, an administrator creates courses in consultation with the instructor, making readings, discussion lists, email and work submission available from any Internet location (including home).

Network Management

Two great impediments to full integration of web-based content into instruction are the capacity of the district's current Internet access and the implementation of Internet Filtering. One T-1 line is insufficient to deliver multimedia content to an entire district, and access slows down severely by the middle of the day. Along with a caching server for frequently accessed resources, an additional T-1 line is immediately needed, with an expansion to DS-3 as soon as that can be accommodated. Running two T-1 lines requires the creation of separate Virtual LANs, which adds a layer of administration and allocation that a DS-3 line would not require.

The district's Internet filter (Symantec Web Security) can be customized by user, but settings are currently too restrictive for faculty, and the process for requesting the unblocking of sites and categories is still not well understood by faculty, nor the response time for those requests trusted by some faculty. These procedural and communication issues need to be addressed.

HARDWARE AND INFRASTRUCTURE: Computer Access Plan

As technology evolves, strategies for providing computer access to students must also change. Providing 1:1 access (one computer per student) is necessary if students are to integrate technology use fully into their learning process. Currently, 1:1 access is offered in labs at scheduled times, and many classrooms provide clusters of machines at a 4:1 ratio for students to use in cooperative learning structures, learning stations, and other small-group activities, or as remediation or enhancement as directed by their teachers. However, the district's vision for computing is to make 1:1 access available in the classroom workspaces where students learn. For this to occur, some version of mobile wireless computing will be necessary.

Though the district had negative experiences with its first pilot mobile wireless laptop cart, the affordability and durability of full-function laptops continues to improve. The current availability of very low-cost, durable word processors with keyboarding programs that interface through infrared with the school network, for example, makes mobile labs feasible and desirable for a range of needs, freeing fixed labs for activities requiring Internet access and higher end applications. Also, MIT is developing Linux-based wireless laptops for schools for $100 each.

Regardless of funding levels and available technology, we must provide equitable computer access and instruction to students at the same grade level, even though access needs are different between grade levels. Well-used computer access can greatly increase engagement, motivation and time on task for students (see http://www.nmsa.org/research/ressum19.htm). They also help students be more organized in their work. From 2005-2009, the district will design and implement a district-wide access plan which aligns mobile labs, stationary lab, and classroom cluster access with applications instruction, classroom access, and project needs articulated in specialist team vision statements. Planning will include the following two tasks:

1. Articulate the relative advantages and disadvantages of each access method (revisiting as technologies change), and align these to the access needs at each grade level.
2. Sketch a staged implementation plan with price estimates for classroom clusters and one-to-one computing via stationary and mobile labs.

Stages Of 1:1 Computer Access

1) **Fixed Instructional Labs**: 1:1 student access for applications instruction. Currently located in S250, S202, S144 and S146.
2) **Open Labs**: 1:1 student access in computer labs signed out by teachers for web quests and other multimedia projects. Currently available in E202, S271 and the Library Media Centers.
3) **Mobile Labs:** 1:1 student access, borrowed as needed by classroom teachers, available equitably by grade. The district has one 12-station mobile cart.
4) **Full One-to-one Computing:** 1:1 student access achieved by providing laptops to all students for school and home use within target grade levels. [See Appendix 11]

HARDWARE AND INFRASTRUCTURE: Mobile Wireless Labs

Advantages

- Brings computing into the classroom environment (prevents the disassociation of classroom content and computer access).
- Laptops can be associated with specialized peripherals as needed (e.g. digital cameras and scanners for art, probes and Proscopes for science).
- Does not take up lab classroom space that could be used for other classrooms.
- Flexible groupings (individual desks, team tables) for more varied classroom structures.
- Individual machines can be customized for Assistive Technology needs.
- Student-produced multimedia increases interest in production ("My friends would not read my report, but they would watch my movie").
- Changes instructional paradigm (student eyes are not on teacher when laptops are open. Teacher acts as guide and coach, gives students problems to solve in order to learn. This requires new approach to professional development.)

Disadvantages and Workarounds with current technology

- **Battery life** (3 hours max)
    - **Workaround:** purchase supplementary batteries which move with the cart, instruct students how to swap so that it does not impact instruction.
- **Internet access is slow** compared to desktops.
    - **Workaround**: purchase faster remote access points, avoid full-class simultaneous big-downloads (e.g. video streaming).
- **Price** (equivalent desktop pc would be approx. $700/ea; mobile laptops are >$1,200 ea.)
    - **Workaround:** use "Writers" (http://www.keyboardinstructor.com), or wait for $100 Linux laptops (when available – see MIT).
- **Vulnerability to breakage and loss,** when used by all students regardless of individual physical self-control or maturity.
    - **Workaround**: use Alphasmart-type devices.
- **Disparity of student keyboarding speeds** makes note-taking difficult.
    - **Workaround**: students download lecture notes & handouts and annotate as they need to.
- **Time consuming for students to remove and replace units from cart**, boot up, troubleshoot if necessary (compared to time lost for moving class to lab?).
    - **Workaround**: keep plugged in all day, don't move carts often.
- **No lab aid** to help resolve mid-lesson difficulties, assist in activity design.
    - **Workaround**: well-designed training, designated help line.
- **PD Needs** (managing equipment, designing appropriate instructional activities) requires intensive commitment of time for teachers, and if equity is a goal, all teachers within a grade level would attend, regardless of personal investment in computer use.
    - **Workaround**: rely on asynchronous professional development (Blackboard) whenever possible and provide team planning periods in place of duty assignments.

STAFFING AND SUPPORT: Computer Lab Staffing

A. Different Lab Uses Require Different Staffing

1. **Teaching Labs** used for Application Mastery where students are learning to be independent users of a mature application (e.g. Microsoft Word, Powerpoint, etc.) **require a skilled computer teacher**, with a comprehensive understanding of operating system, application, lab management and pedagogy, technical issues, and student learning styles, and the ability to troubleshoot and maintain a complex software suite.

2. **Open Labs** (for students doing independent or project work) **require a trained aide** to maintain the lab, help supervise student work, and provide support. Training in specific tasks in an Open Lab (e.g. logging on, drill & practice, online testing, circumscribed project work) can be done by either a classroom teacher or an aide.

B. Adequate Staffing and Equitable Access

1. Computer access plans should ensure all students have sufficient opportunity to learn and meet computer skills targets.
2. Current district computer skills standards (see Appendix 10) require realignment (see "Skills Standards Action Plan" in the "Curriculum" section of this plan.)

C. Use Schedule Proposal For The Primary Lab

We need to provide exposure, introduction and guided practice in basic skills for our youngest students so that they able to follow directions and complete simple educational tasks with computer clusters, labs, and libraries. The National School Boards Foundation (2000) recommends:

> "[Schools should] foster appropriate use of the Internet among preschoolers and other young children**.** Exposure to the Internet can help preschoolers and children in the early elementary grades master literacy and other cognitive skills and also can spur integration of these skills early in their development…. The Internet can reinforce everyday learning opportunities and be a powerful tool for fostering interaction among adults and young children. " *http://www.nsbf.org/safe-smart/full-report.htm*

We need to provide exposure, introduction and practice in basic skills at the Primary level. Teachers or Teaching Assistants may teach these skills. The Primary Lab will be used both for Skills Instruction and for Open Lab activities. According to grade level teams, the following schedule is desired:

1. **Students in grades K and 1** meet in the lab once per week to learn basic skills necessary to participate in Library Media Center activities and basic lab work, and practice keyboarding.

2. **Students in grades 2 and 3** meet in the computer lab once per week for ten weeks for more advanced skills, leaving the lab open for classroom projects for the rest of the year.

Use Schedule Proposal For The Primary Lab (continued)

Skills Instruction in the Primary Lab

The following plan for skills instruction evolved from discussion with teacher teams grades K-3:

1) **Students in grades K and 1 would meet in the computer lab once per week for the year.** In the first 10 weeks, students learn basic skills necessary to participate in Library Media Center activities and basic lab work, and practice keyboarding. For example: Logging In, Saving Files, Keyboarding, Creating Work in KidPix, Using the Web, Creating Work in Student Writing Center). For the rest of the year, students would build and apply basic skills to curriculum integration.

2) **Students in grades 2 and 3 meet in the computer lab once per week for the year** (starting after the first five weeks of school are done) for more advanced skills. For example: Supporting the technology integration work of Grades 3 & 4 teachers, preparing them for work in higher grades. Using Microsoft Word for publishing, navigating the internet and use search engines for research, and using online learning tools to supplement curriculum.

This schedule would leave the Primary lab open for classroom projects and activities for the remainder of the year for grades 2, 3 & 4 (in addition to the library media lab). The lab will continue to be staffed by a trained Teaching Assistant who can provide basic applications instruction and configuration support for the use of drill-and-practice software such as 'Type to Learn" and training on discreet necessary tasks such as logging in or web browsing.

Open Lab Activities for the Primary Lab

Teachers at each grade level will share successful lab activities with each other, so that all students have the same depth of experience and achievement regardless of which classroom they may be placed in. The computer teacher or teaching assistant should share successful activities with all classroom teachers to build horizontal consistency. The following is a list of some projects teachers in the primary grades have used with their students in the lab, in addition to drill and practice software such as Math Blasters, Reader Rabbit and Type To Learn:

- Holiday Greeting Cards: Print Shop
- Spelling Words: Student Writing Center
- Story Starters: Student Writing Center
- Student Profiles: Power Point
- Mayflower Virtual Crew: Scholastic Web
- NASA for Kids: NASA Website
- Integrated research partnership with the librarian using search engines and hotlists
- Publishing fictional stories and nonfiction essays using Microsoft Word

STAFFING AND SUPPORT: Instructional Technology Specialists

The following are recommendations for redefining the IT Specialist position.

A. **Re-Create IT Specialist Job Description, e.g.:**

Time expectation: 5-10 hours per week (in place of duties, 1 prep, and after school)
Reports to: School Prinicipal, Technology Curriculum Coordinator
Duties: Attends monthly IT Specialist coordination meetings
Provides school-based technology planning coordination/follow-up
Pro-active Instructional Technology Support
In-Service course teaching
School website maintenance
Regular shared planning meeting with lab instructor(s)

B. **Increase IT Specialist stipend**

This stipend more accurately reflects the time spent and additional knowledge required to effective support teachers with instructional technology integration. IT Specialists should not be assigned a duty (such as a study hall or lunch supervision), and therefore have an additional period during the day to be available to help teachers. IT Specialists are not considered "Teacher Specialists" and would not attend those meetings (See #4, below). They should, however, attend one grade level meeting per month.

C. **Ensure IT Specialist Coordination.**

Coordination is currently the responsibility of the Technology Curriculum Coordinator. This includes identifying and organizing training for district-wide software (e.g. Grade Quick, Learning Village, Dreamweaver, United Streaming), and helping IT Specialists meet district technology planning needs. In the event this position is dropped for budgetary reasons, an additional Teacher Specialist position needs to be created. This position would carry with it the same stipend as other department and grade level Teacher Specialists, and would hold similar responsibilities, plus provide a voice for technology at monthly teacher specialist meetings (elementary and secondary).

D. **Increase the number of IT Specialists**

IT Specialists need to be members of school faculty teams, participating in meetings, attending lunch, and having the collegial contact necessary to infuse technology into the culture of their schools. This year, we did not have an elementary IT Specialist – it is important to find a teacher for that position. Elementary teachers need support at the beginning and end of their school day, when secondary IT Specialists are not available.

E. **Place a dedicated "teacher only" computer in selected IT Specialist Rooms.**

Teachers may wish to be able to work independently on computers in the company of IT Specialists (should they get stuck) during their prep times, which will not usually coincide with IT Specialist preps. IT Specialists who are willing to allow teacher access during teaching periods (either as an open offer or during certain periods by agreement) should be assigned an additional computer for this purpose.

STAFFING AND SUPPORT: Instructional Technology Support Services

Guiding Questions for the provision of technical support include:

- Who will be responsible for providing technical assistance and support?
- How can we build technical support capacity within the staff so that equipment will be maintained and kept reliable?
- What are our contingencies for providing just-in-time services when the technology breaks down?

The following services are currently provided by the Technology Curriculum Coordinator (TCC) to integrate technology into instruction. An IT Specialist or library/media specialist, depending on their availability and skill levels, may also provide these services upon request. Maintaining an in-district expert in both curriculum design and technology integration can help teachers following ways during preps, after school or via email:

- Co-planning activities as "cognitive coach" and/or "technology expert".
- Co-developing presentations and web-based materials to specifications.
- Serving as "in-class techie" when preparing students to use computers
- Providing software training for teachers or students.
- Observing and reflecting on products and activities in the classroom.
- Archiving teacher and student work for the year-end showcase.

Below is a menu of options developed particularly for a "Poetry Powerpoint" project in 2005. A meeting with the TCC and lead teacher determined which of these would be pursued , and what the time commitment and schedule would be. An in-service course (with stipends) can also be designed to support such projects if they are going to be developed by teams.

A. Assist in Developing Presentations to stimulate and inform class discussion and learning:
   1. Graphic Organizers (Inspiration, digital images/spreadsheets, etc.) to convey concepts.
   2. Web Pages to lend a biographical, historical or thematic context to the readings.
   3. Creating Videos of poet performances (after looking at poems, to show interpretation)
   4. Designing Videoconferences: Partner Classrooms, Museums, "Virtual Poetry Salon"

B. Structure activities for Classroom Computer Clusters to increase student engagement and reflection as they use technology in creative ways.
   1. Learning Station: students rotate through stations: from a computer "island" to reading circles to teacher-led discussions to writing activities.
   2. Cooperative Learning: students work in cooperative teams, with each team using one computer for a component of their assigned work.
   3. Activities include:
      a. Discussion Boards and Blogs (Learning Village, other Web BBS)
      b. Supplemental readings from related websites
      c. Web Quests to collect material for Powerpoints.

C. Help plan for, design and evaluate Student Multimedia Projects to provide opportunities for all students to comprehend more deeply and critically as they analyze readings, synthesize relationships with other sources, and create interpretive projects. Ideas:
   1. Student-written Poems: inspired by activities and online examples .
   2. CDs of iMovies (iPoems) or Powerpoints to share final products.

D. Find and Organize Websites for Projects (web quests, showcase sites).

STAFFING AND SUPPORT: Technology Professional Development

Technology Professional Development is currently offered through Superintendents Conference Day "mini-courses" to provide exposure and awareness of software and models, followed up by after-school courses during the year, and multiple-day courses during the summer. Participation in these courses are usually compensated via stipends, and offered in response to either needs assessment surveys (both formal, during Conference Days, and informal, through e-mails) or by teacher request.

However, a large turnover of personnel, the evolution and adoption of new software and hardware, varying teacher attitudes, and the difficulty of providing in-service training convenient and customized for all faculty has resulted in serious gaps in ability. Professional development for technology needs to be delivered to all faculty members, not just "pioneers", in a form that is appropriate and accessible to each. Guiding questions for designing an effective Instructional Technology Professional Development strategy include:

- How will we find out the current skill levels of staff, and identify the particular skills they will need to fulfill this plan's objectives for instruction at their grade level/subject area?
- How will we design and implement a professional development and training strategy that meets the needs of all staff?
- How will we use technology to provide professional development, training, and ongoing technical support for teachers as they integrate technology into the curriculum?
- Who will be responsible for ensuring and coordinating professional development?

From 2005-2008, the district will refine our instructional technology professional development plan to address these questions, including the following elements:

A. Develop a sequenced series of technology trainings, with the goal of baseline equity for teachers within grade levels / subject area teams.
B. Devote an entire Superintendents' Conference Day each year to instructional technology training by department/grade level. Create courses by grade level / subject area team request to ensure appropriate applications based on instructional needs.
C. Create online courses (via Blackboard and other tools) so that individual teachers can obtain training as needed, on a schedule with which they are comfortable.
D. Build the cadre of district teachers (in addition to IT Specialists) willing to lead technology in-service courses by raising the stipend allocation to twice the number of scheduled course hours, addressing preparation and off-schedule support time.
E. Encourage IT Specialists and other tech-savvy teachers to host "Cracker Barrel" sessions before school (Elementary) and after school (Secondary) to highlight features of commonly used software

A. Technology Training Sequence Course Number Codes

We seek to make teachers comfortable and competent as users; to allow them see the value of using these tools every day, so that they will promote their use for students as well. Therefore, in-service sessions should give as much hands-on time as possible. Also, there should be clear differences in methodology between beginner courses and advanced courses. For beginner courses, participants should work individually with the same material, with few choices; for advanced users, choices and group work is called for. Finally, courses should be customized for student level. Technology integration workshops often require different materials and structures for secondary and elementary students.

000 Awareness Courses (Level 1) 1-3 hours
These courses may be taken by anyone. Their purpose is to introduce novices to computers as teaching or productivity tools. Participants are expected to take these courses as part of an individual process of identifying goals to work toward, such as obtaining a classroom cluster or new software. Orientation classes are an example.

100 Beginners Training (Level 2) 3-6 hours
These courses help users who have just received equipment or software to make best use of those tools to help meet district goals. These courses are expected to have an immediate and positive impact on teacher productivity and/or instructional effectiveness, and draw from a bank of templates and models that can be accessed in later courses. Activities will focus on engaging teachers to create useful products.

200 Advanced Skills (Level 3) 6-18 hours
Most software available now is quite sophisticated, requiring on-going refreshers and sharing of special features. Advanced courses in Microsoft office, Gradequick and Learning Village were offered in 2004-5. Participants should take advanced courses only for software or hardware they are using or plan to use in the immediate future. Courses will be evaluated for effectiveness based on the quality of developed products, as determined by instructor. Summer "Project Design Studios" are also in this category.

B. Conference Day Planning (example)

September: Use the first Superintendents Conference Day for any faculty-wide orientations to new network configurations or procedures, and to survey teachers on critical individual computer use training needs (One Hour).
October: Devote to instructional technology training by department/grade level. Create courses by grade level / subject area team request to ensure appropriate applications based on instructional needs (see Curriculum Integration Plan)
November: Hold showcase & roundtable discussion sessions for teacher projects, geared for grade level and content area teams.

C. Online Professional Development (OPD) Plan

Online courses do not require participants to meet in one place and time. The district has chosen the Blackboard platform for courses in 2004-5, including Differentiated Instruction with Technology, Designing Websites with Dreamweaver, Gradequick for Grading, Adobe Photoshop Elements, and Student Multimedia Projects. Online courses must provide interactivity, including simulations and video and chats and other rich Internet based modes, to make the courses desirable to users.

D. Sample Course Sequence

*Codes: **A, E, P, I, S, M or H** = All, Elementary, Primary, Intermediate, Secondary, Middle, High.*

LEVEL 000: 1-Hour Awareness Courses (11/12/04 Conference Day)

P014	Virtual Field Trip Sites for Primary Grades
I017	Webquest Projects Survey for Intermediate Grades

LEVEL 100: Beginners Training – Applications and Models (3-6 Hours)

H111	Internet Research Strategies for Lesson Planning: High School Level
A112	Spreadsheets: Creating Rubrics and Charts

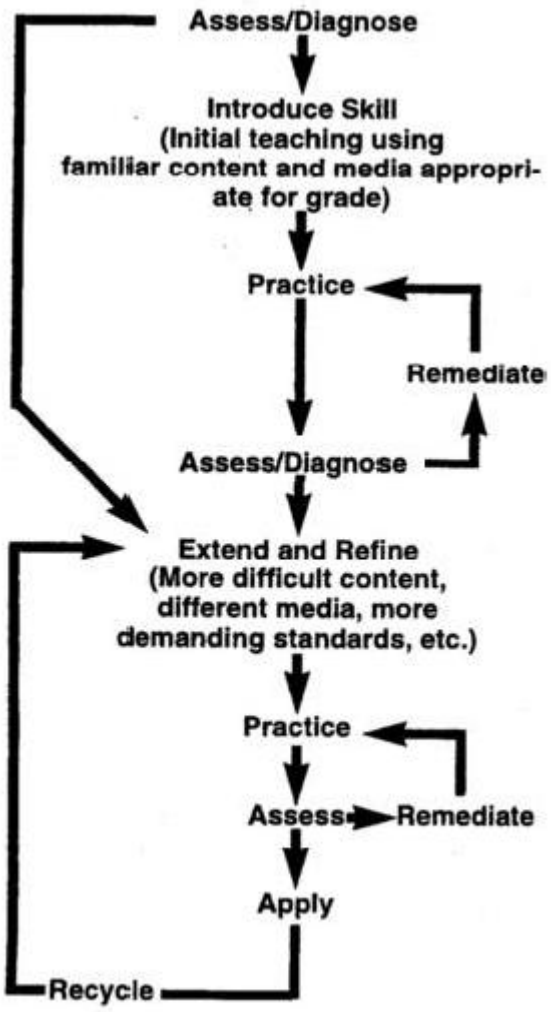
LEVEL 200: Advanced Skills for Project Design (6-18 Hours)

A002	Design Studio: Developing Webquest Projects
A006	Designing a Virtual Field Trip
A008	Differentiating Instruction With Technology

CURRICULUM AND SOFTWARE: Computer Skills Standards

Computer use skills today are as essential to teaching and learning as decoding and penmanship were at the dawn of public education. In accordance with our mission statement, we must **ensure that our students master the necessary skills of 21st Century scholarship**: the ability to research, communicate, and produce quality work at grade level. Our students need to be trained for success at grade-appropriate activities requiring computer access. We must there articulate, implement and evaluate standards for these skills.

From 2005-8, the district will draft, approve, and implement the following standards:



1. Vertical Alignment of Skills K-12

Work Plan: The district took a significant step by articulating computer skills standards K-6. We will assess and modify these standards to meet computer skill gaps we are now aware of, and extend that articulation through the secondary level, referencing both state standards and local needs. Our primary focus will be teaching the essential skills necessary for academic success, with a secondary focus on preparation for the workplace.

Implementation: Work will be conducted through circulation of drafts and questions via email, with occasional stipended meetings for specialist team tech contacts.

2. Instructional Plan for Technology Skills

Work Plan: Vertically integrate computer instruction curricula accounting for what was previously taught, emphasizing skills that require mastery level for classroom, lab and library work at each grade level. In particular, a plan for skills instruction for grades K-3 is needed. We will draft an alternative plan to meet those standards we deem essential, and eliminate non-essential standards. We will make a distinction between the following two modes:

- "**Applications Instruction",** where students are trained to function independently using productivity software such as Word or Powerpoint. A Computer Teacher with a set curriculum is required for these objectives.
- **"Task Instruction**", where a small component of a productivity tool, use of drill-and-practice software, a network operation, or some other easily taught and refreshed task is required for schoolwork. A Classroom Teacher can be expected to provide this training with the necessary In-service preparation. In a lab setting, a trained Teaching Assistant can also provide this training, in addition to support classroom teachers to solve technical issues and provide one-on-one assistance as needed.

- **"Class Project Work",** where previously taught skills and applications are used to integrate technology and classroom instruction to meet content area standards. Student demonstrations will help other students remember these operations. Teachers may choose to introduce new skills as part of a particular activity.

Format of Skills Standards

To be functional, skills standards must include outcomes that can be measured with a performance assessment. The following table is a minimal illustration:

Grade	Content Knowledge	Application	Teaching Time	Proficiency goal
5	Elementary Word Processing	MS Word	10 hours	Create a document, (move, copy, paste) text within document, format fonts, margins, elements to specifications, spell check, save to H:

1. **Keyboarding**: It is generally observed that those students who do not regularly keyboard at home are at a great disadvantage. Keyboarding instruction and practice that incorporates performance targets will need to be part of each grade level's schedule and plan. These targets could be met through scheduled computer lab sessions with "Type to Learn" (Mac) and "Microtype" (PC), with Alphasmart Neo or other sturdy portable keyboards, or with mobile wireless labs**.** Here are draft **minimum keyboarding standards** in words per minute (with 90% accuracy by grade 8):

Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
5 WPM	10 WPM	15 WPM	20 WPM	25 WPM	30 WPM

2. **Word Processing:** There is a broad range of skills associated with word processing, which need to be articulated by grade level. For example, at what grade should spell-check be taught, and when should teachers demand spell-checked work?

3. **Powerpoint:** Students use Powerpoint to express themselves visually, engage more deeply with content, guide oral presentations, and produce for each other. Seventh Grade teachers expect that students will be fluent in Powerpoint. At what grade level should Powerpoint be taught at mastery level?

4. **Advanced Applications:** Excel, Access, Photoshop, and Web Design are taught in grades 7 and 8. However, many students are showing up without a solid foundation in the basics. A re-balancing of foundation skills with advanced applications is indicated.

Next Steps

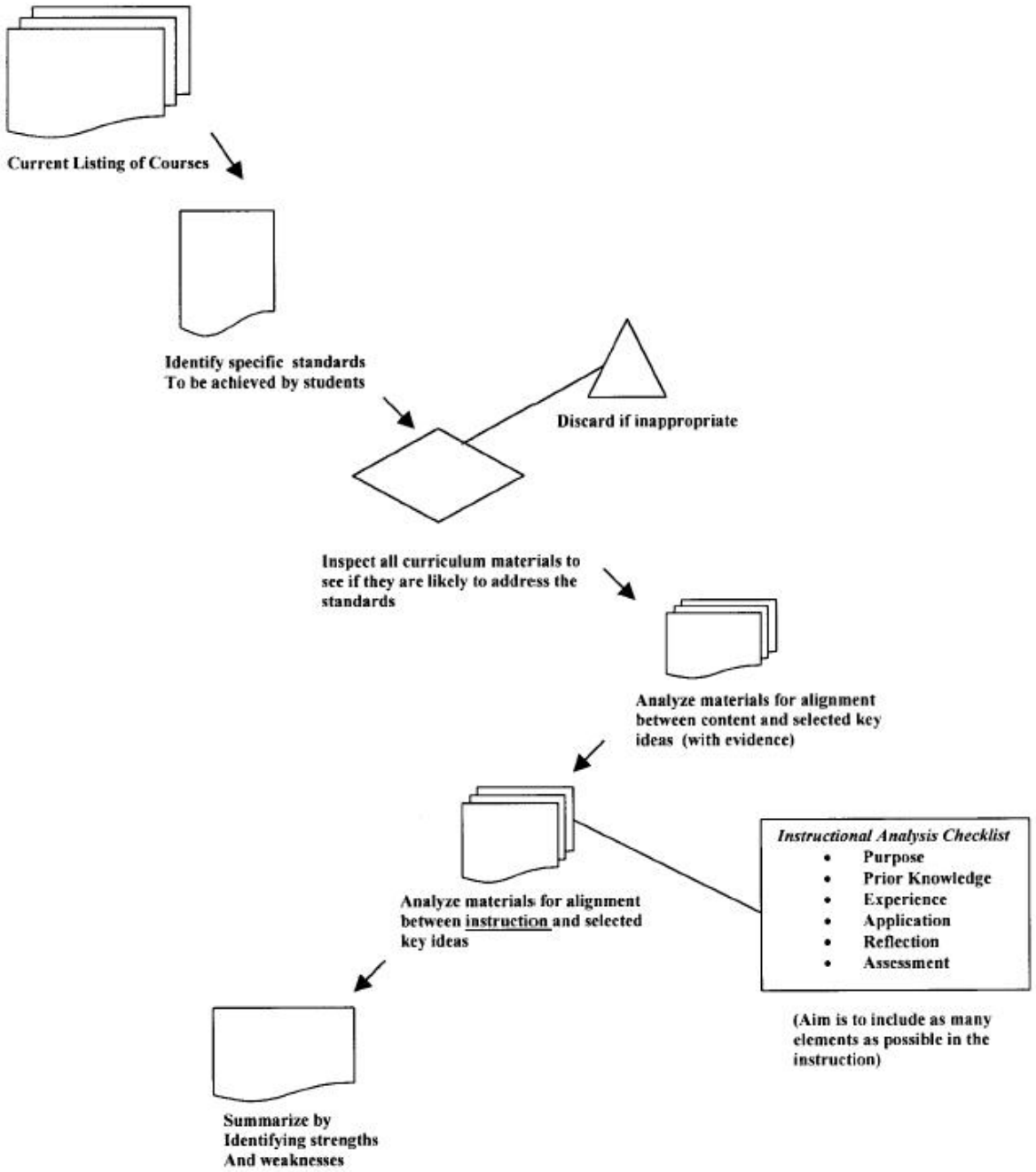
The technology curriculum coordinator will work with principals and teachers from each grade level team to refine the plan and ensure appropriate support and professional development exists to meet the standards articulated. Standards and benchmarks will address the following:

1. What teaching method (e.g. applications instruction by a computer teacher, skills instruction by a classroom teacher) will be used, and in what setting?
2. Will standards specify integration into curriculum? (e.g. "students will use spreadsheets to analyze survey results as part of U.S. Government study")

3. How will student achievement be assessed and recorded for standards not met in the context of computer applications instruction?
4. What remediation will be available for students who do not achieve the standard by the end of the indicated instructional period?

The process diagram on the next page describes a path to take to complete this work.

Technology Skills Benchmark Process



CURRICULUM AND SOFTWARE: Curriculum Integration

Although components of this plan fall under "Professional Development", the specific focus is to provide the scaffolding, training, support, and motivation for teachers to integrate technology more frequently and more effectively in their instruction, and to share successes with their colleagues. Our goal is to help teachers move through the phases of "Exposure", "Adoption", and "Adaptation" through to "Appropriation", when digital technology becomes an integrated part of the classroom learning environment, as it currently is in academic and work environments.

1. **Project Databank:**

Each Grade Level / Department Team will contribute to a database of curriculum integration examples they have found to be successful, so that teachers who have less experience (or teachers new to the district) will have ready reference to what works, and be able to provide a level of parity across the team. A target number of activities for each department can be set, and their entries referenced. For example, the following information would be entered for a Weather Data Collection activity:

Unit/Topic/ Theme	Process Skills	Technology Connections	Standards/Benchmarks/ Expectations
Weather: How does weather affect people and the environment?	Data collection and observation	Use the Internet for weather conditions/Weather Cam. Place data on Excel spreadsheet for ongoing weather data collection. Video broadcasting with weather reports.	Describe weather conditions. Describe seasonal changes in New York's weather.
New York/ Map/ Geography Why do we need maps? How do maps help us? How does geography affect people and locations?	Acquiring and organizing information	Use draw/paint program to create maps. Use draw/paint to create bird's eye view representation of specific areas in New York. Scan photos for display of New York locations to place on large map or create big book. Use Excel to graph area frequently visited by students. Use Internet sites to collect information regarding the geography of New York	Sketch maps of the region. Describe places, cultures, and communities. Describe the geography of New York, its history, and reasons for change. Describe and compare location characteristics for human adaptation.

2. **Project Design Studios:**

The elaboration of integration examples into project resources and guides can be part of a Project Design Studio. These courses may be taken by anyone who has either taken the advanced level course for the given hardware and software identified in the course description, or has enough personal experience to be able to work independently for the most part. Participants take these courses in order to develop classroom projects and tools, and will leave the course with products they will use.

Courses will be evaluated for effectiveness based on the success of implementation efforts of activities and products developed during and following course meetings. These courses can be conducted in a hybrid of in-person meetings (such as Webquest Projects) and Online using Blackboard (such as last year's Differentiated Instruction with Technology) depending on the ability levels, preferences and availability of participants. The chart below indicates a range of instructional technology strategies that specifically target learning standards for content knowledge.

Strategies for Integrating Technology To Build Content Knowledge

Scaffolding Techniques	Examples of Appropriate Technologies
Learner Difficulty: Conceptually Difficult	
• **Modeling**: given a model, ask learners to "rediscover" and interpret in an active and exploratory way. • **Scaffolding**: find out misconceptions and look for internal patterns- • **Articulation and reflection**: organize knowledge actively, make knowledge-construction activities overt, use presentation and peer critiquing.	**Tools for inquiry (theory building):** • Modeling and simulation toolkits (e.g. Interactive Physics, Geometer's Sketchpad) • Visualization software (e.g. excel graphing). • Virtual reality environments (3-D Walkthroughs). • Data modeling: defining categories, relations, representations (e.g., Stella). • Procedural models, mathematical models • Knowledge representation: outline tools, semantic network, (e.g., Inspiration, PPT)
Learner Difficulty: Foreign	
• Design learning tasks that require identifying and explaining or defending alternative points of view. • Encourage examination of existing knowledge • Encourage multiple passes through information • Treat gaps in knowledge in a positive way • Support varied ways for students to organize their knowledge.	**Tools for communication:** • Asynchronous and synchronous computer conferencing (e.g. e-mail, Chat, Learning Village BBS conferencing on the Web [see Resources]) • Student-created hypertext environments (e.g. Websites) **Tools for inquiry:** • Knowledge representation: semantic network, outline tools • Internet for research **Tools for expression:** Multimedia composition (e.g. HTML, Powerpoint, Flash)
Learner Difficulty: Knowledge Transfer and Application	
• Design projects to build cognitive and metacognitive capabilities. • Explicitly demonstrate and discuss how the knowledge gained in this project may be applied in other projects and domains. • Facilitate transfer of knowledge across contexts by applying knowledge across disciplines.	**Tools for communication (collaboration}:** • Collaborative data environments • Group decision support systems • Shared document preparation. **Tools for inquiry:** • Knowledge integration (e.g., hypermedia authoring-e.g. Websites). • Knowledge representation: semantic network, outline tools (e.g., Inspiration} • Internet for research
Learner Difficulty: Self-Regulatory Learning	
• Teach students to think like experts and encourage learning strategies other than rehearsal. • Make thinking visible and maintain attention to cognitive goals rather than task goals. • Make learning processes visible and provide relevant feedback on the processes. • Give learners legitimate role in the community of learners. Give students more responsibility for contributing to each other's learning. • Use a real audience to evaluate their work. • Provide opportunities for reflection and individual learning styles.	**Tools for inquiry:** • Knowledge representation: semantic network, outline tools (e.g., Inspiration) • Online inquiry tools (e.g., WISE [see Resources]) • Internet for research **Tools for construction:** • Robotics kits **Tools for expression:** • Hypermedia authoring (e.g. Websites) • Multimedia composition (e.g. Powerpoint, Flash)

CURRICULUM AND SOFTWARE: Software Management

In the past two years, a software database has been created and maintained to manage our titles and licenses, and a network software deployment solution, Altiris, has been implemented. It is now possible for district technicians to determine the software configuration of most computers on the district network and to make changes remotely. Beginning in 2005, descriptive reviews will be associated with the software on the database, so that it may be searched for software to meet particular needs (such as beginning reading instruction, for example). Instructional Software may be organized in the following eight categories:

1. **Communications** (Outlook, Explorer, Synrevoice);
2. **Data Processing** (Excel, Access, Filemaker Pro, Starbase);
3. **Multimedia Production and Presentation** (Powerpoint, Mozilla, Band In A Box, Pro Tools, Adobe Photoshop, iMovie);
4. **Computer Aided Instruction** (Cabri Geometry, Interactive Physics, Accelerated Reader) **Reference** (Digital Encyclopedias),
5. **Word Processing & Desktop Publishing** (MS Word, MS Publisher, Print Shop)
6. **Drill and Practice** (Math Blasters, Reader Rabbit, Type To Learn),
7. **Integrated Learning Systems** (Lightspan, Compass Learning, PLATO, Kids College)
8. **Assistive Technology** (Dragon Naturally Speaking, Kurzweil).

The following is our current policy for software management, by machine and setting. For the purchase of new Integrated Learning Systems and other high-end, resource-intensive and expensive software, the district has adopted a "Software Approval Form" – see next page.

IMacs: Our iMacs are currently built on "images" designed for "Primary" and "Intermediate" machines. Software configuration for these machines must be determined by instructional needs articulated by elementary classroom teachers and the library/media specialists, and it should be clear from the "alias" list which programs are installed. These are available in classrooms, S202 and the Library Media Lab.

PowerMac G3s: These are available only in S250 and as individual stations on monitor carts. Individual units may be customized based on user needs; units in S250 are imaged based on the needs of Intermediate grade applications instruction and classroom projects.

PowerMac G4s: A bank of 8 machines is available in S250 for digital video imaging. They are not part of the school network, because of operating system incompatibilities.

Individual PCs: A software database reflects available information about how many licenses have been purchased for what software for which teachers. We now have the capacity to install and uninstall software at will over our network, as long as we know the "computer name". Teachers who include computer names with their software install work orders will be served quickly.

Instructional PC Labs: Software licensing purchases and installs for instructional labs are determined by the course syllabus as interpreted by the instructor of the course. In the event that instructional labs serve as open labs during prep periods, additional software may be installed.

Open PC Labs: In addition to the district "software toolkit" of Microsoft Office, special software for open labs is determined by the needs of teachers who use those spaces, and the capacity of the machines. For example, although we have a site license for Macromedia Studio 2004, it requires Pentium IV machines.

CURRICULUM AND SOFTWARE: Integrated Learning Systems

One form of **Computer Assisted Instruction (CAI)** is the Integrated Learning System (ILS), which combines **learning activities (tutorials)** with **drill and practice (online quizzes)**. The best of these systems allow teachers to assign activities and manage students, but allow students progress at their own speed, with the software diagnosing their level based on quiz performance and adjusting activities accordingly.

Products: In 2003-4, the district explored **Lightspan Achieve Now**, **Compass Learning Odyssey,** and **PLATO.** Following these explorations, Lightspan was adopted and purchased for grades 2-8. Compass Learning Odyssey was adopted for Middle School math as a pilot. In place of an Integrated Learning System such as Compass Learning, Accelerated Reader was adopted for Middle School Language Arts.

Lightspan Achieve Now is a Playstation-based ILS purchased in 2002-3 in connection with the Reading For Results grant. Initial adoption was poorly received, but a focused and coordinated effort this year resulted in enthusiastic adoption by the Elementary School and interest by grades 5 and 6. **Kids College** is currently being demonstrated to focus groups in the district, and should be evaluated in comparison to Compass, Lightspan and PLATO (see appendix). Red Hook, which boasts the highest ELA scores in the Dutchess County, has been using **Compass Learning** for the past six years. Hudson City Schools has been using **PLATO** for AIS for the past two years.

Cost: The management and content depth behind effective ILS systems make them expensive to purchase. Teachers need to be trained to manage them, and the training is also costly ($800 a day for Compass). Integrated Learning Systems are sold by license (either concurrent licenses, which limit how many students can use the software at one time, or by individual student). Licenses can be leased annually (an appropriate strategy for a pilot year) or purchased outright (more economical, once an ILS is adopted).

Concerns: Without effective teacher training in management, and without implementation coordination, ILS's are not used well and end up abandoned. Also, systems differ widely in depth of content, customization for student levels, and effectiveness of tutorials. Faculty and student comparative evaluation and buy-in is essential before purchasing an ILS. *A criteria sheet to be used for the purchase of Integrated Learning Systems is attached.*

Networking: ILS systems deliver multimedia content over the network, and class-wide simultaneous access can make them unfeasible when delays occur due to network capacity. During an evaluation period, software can be delivered entirely over the Internet with the support of a caching server to host local content. A more expensive option, more reliable and less bandwidth-intensive, is to host the software on local servers which do not require traffic through the school gateway. The district network administrator should be involved very early on in the evaluation and specification of implementation plans for Integrated Learning Systems.

ILS (Tutorial Software) Purchase Criteria (Draft - 2005)

From Computer Drill and Practice Tutorials: Are They Effective?
Sonia Jurich, TechKnowLogia, March/April, 2001

Instructions: Integrated Learning Systems (such as Lightspan, Compass Learning, PLATO, and Kids College) are significant investments requiring high, sustained commitment on the part of the teacher, school and district to implement effectively. Research suggests that computer tutorials can be employed to boost students' academic achievement and interest improve basic skills in mathematics and science for students in all grade levels. However, as with any tool, the final success will depend on how well it is used.

After a comparative evaluation has been conducted (including student use trials), the lead teacher / administrator for the project should compose an ILS purchase proposal, which covers the following items:

1. **Program objectives** – The tutorial's objectives must correspond and complement the educational goals defined by the academic program and implementing teacher(s).

2. **Instructional integration plan** – Research suggests that ILS software is more effective when used to reinforce or clarify topics that were discussed in class.

3. **Cost-effectiveness** – Describe the results of a comparative evaluation of the proposed software with at least one alternate, considering educational objectives and potential benefits of this choice.

4. **Use Plan** – Address the following questions:
    a. How frequently will the program be used?
    b. Where will students use the software?
    c. Will software use take from classroom time or complement it?
    d. Does the school have a place where students can use the program outside classroom time?

5. **Content quality** – Fancy software with weak project content will not be helpful. Address the following questions:
    a. Is the content correct and updated?
    b. Is the level of difficulty appropriate for the students?
    c. How well is the content integrated with the curriculum and the lesson plan?

6. **Presentation quality** – Uninteresting software will not effectively motivate students. Describe the results of student trials with this software, including student comments.

7. **Hardware and network requirements** – ILS systems which are not hosted on local servers cost less, but take up substantial bandwidth. This section should be completed by the Network Administrator, after running a test of the software on multiple workstations during peak use times (11:00am – 1:00pm).

CURRICULUM AND SOFTWARE: **Assistive Technology**

In 2004-5. district personnel formed an ad-hoc workgroup to explore ways to help special education staff work with classroom teachers to differentiate instruction and help students work more independently. In coming years, special education staff will be collaborating more on lesson plan design in order to customize instructional planning and materials to accommodate the needs of students with disabilities. Professional development, on-site resources, and access to experts and professional associations will help inform their work, and the work of teachers differentiating instruction for learning styles and supporting independence for students with disabilities.

Though perceived as a less immediate priority by current staff, the identification of specialized equipment for instructional accommodation is also part of the district's responsibilities in meeting the requirements of IDEA legislation to provide appropriate accommodations for special needs students. Another aspect of our Assistive Technology Planning will be to obtain, organize and communicate Assistive Technology recommendations to CST and CSE committees when individual accommodations are required for students with disabilities.

- Work with Questar to establish an Assistive Technology Co-Ser, with the following components: 1) List serve, 2) Data Base, 3) Expert advisors, 4) Teacher Center for software evaluation, 5) In-Service Courses for teachers.
- Assign a person or committee to be responsible for updating disability-related program-access policies and guidelines and for assuring compliance.
- Create an extra service position for district special education staff (one elementary, one secondary) who will educate themselves on Assistive Technology, including attending conferences.
- Review guidelines by other organizations (see Assistive Technology URLs)
- Update policies and procedures for the identification, procurement, use, and management of assistive software and devices.
- Establish a budget within SE and Title I for creating an in-district "Teacher Center" of software, devices and ideas for Assistive Tech.
- Expand our district software database to include Assistive technology software used here, with recommendations and use tips by teachers.
- Brainstorm potential access challenges that students and employees with disabilities face within the programs, services, and resources offered using electronic and information technology at Taconic Hills.
- Review Section 508 standards (http://www.access-board.gov/508.htm)
- Disseminate accessibility policy, guidelines, and procedures for the district. Make it clear that the policy has high-level endorsement.
- Provide training and support for accessibility issues, policies, and guidelines. Identify distance learning courses to help train district staff.
- Develop procedures for responding quickly to requests for disability-related accommodations. Applying accessibility policies, procedures, and standards will assure that such requests are kept to a minimum.
- Regularly evaluate progress made toward the use of accessible electronic and information technology.

CURRICULUM AND SOFTWARE: Tech Scouts Course Proposal

(For future consideration)

Course Title: Tech Scouts: Computer/AV Support Internship

Goal: Train and coordinate students to provide computer technology and A/V support to the school community as workforce preparation.

Grade Level: High School grades 9-12

NYS Learning Standards: CDOS Standards 1, 2, 3a, 3b

STUDENT GOALS:

1) Support teachers integrating specific applications in instruction (e.g. designing databases, websites on demand, digital video editing).
2) Support AV needs (event setup and stage crew, audio production studio).
3) Recondition older computers for surplus to community uses.
4) Assist in training sessions for students, teachers and community members after school.
5) Obtain "School To Work" training in preparation for a career in technical support services.
6) As available, participate in in-person or telecommuting internships with other agencies, supervised by course instructor.

CURRICULUM:

This a proposal to fund a .2 part/time faculty position (or a portion of a full/time IT Specialist position) to teach 1-2 sections of a credit-bearing course in the Business Department in 2005-6 for school-to-work, community service and computer/AV skill development. The curriculum would be as follows:

Students begin by learning the basics of maintaining the A/V equipment, computers and software, practicing those skills in a lab set up for that purpose. This background content and skill set is individualized, depending on skills already present in each student and those they desire to specialize in. "Hardware Maintenance" may interest some students; "Digital Video Editing" others. At Level I, students individually demonstrate their capacities, students earn their way through steps of teacher-defined recognition projects.

1. At Level II, when a students skills, ability to work interdependently and with focus permit, they join "Job Shop" - a system for receiving, responding to and evaluating tech support requests, which is part of an ongoing school activity (as Yearbook is).

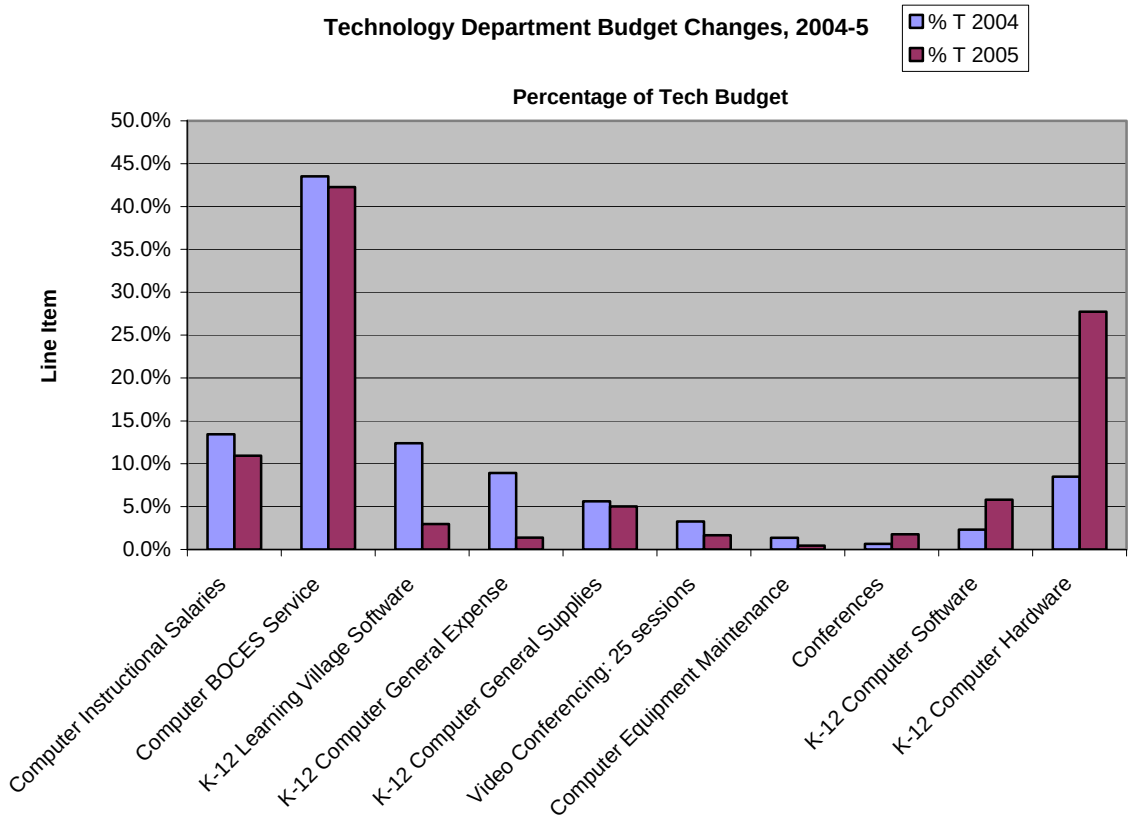
2. At Level III, Students who are judged to be sufficiently knowledgeable can respond to tech support requests and leave the lab in response to calls for help from the community they service, and perform regular self-evaluations with corresponding additional training from the teacher. Repair or solution will be attempted on-site, but if necessary equipment can be brought back to the lab for in-house work.

For more information, visit http://www.cousinit.org/tscouts

IMPLEMENTATION: Budget Plan And Analysis

	2004-5	% T 2004	2005-6	% T 2005	% Change
Computer Instructional Salaries	$49,470	13.4%	$49,516	10.9%	-2.5%
Computer BOCES Service	$160,195	43.5%	$191,234	42.3%	-1.3%
K-12 Learning Village Software	$45,612	12.4%	$13,448	3.0%	-9.4%
K-12 Computer General Expense	$32,876	8.9%	$6,211	1.4%	-7.6%
K-12 Computer General Supplies	$20,700	5.6%	$22,700	5.0%	-0.6%
Video Conferencing: 25 sessions	$12,000	3.3%	$7,500	1.7%	-1.6%
Computer Equipment Maintenance	$5,000	1.4%	$2,050	0.5%	-0.9%
Conferences	$2,425	0.7%	$8,000	1.8%	1.1%
K-12 Computer Software	$8,500	2.3%	$26,291	5.8%	3.5%
K-12 Computer Hardware	$31,250	8.5%	$125,420	27.7%	19.2%

NOTES: Changes of over 2% are marked in yellow. %T refers to the percentage of the total Technology Department budget.



ANALYSIS: Technology Budget, 2005-2006

Budget Comparison	2004-05	2005-06
District Budget	$27,226,519	$28,972,988
Tech Budget	$368,028	$452,370
Increase		$84,342
Percent Increase		22.92%
Percent of Budget	1.35%	1.56%

The budget plan for 2005-6 is the result of Board decisions in a very tight budget year. A 23% increase in the Technology Budget for the 2005-2006 school year reflected commitments to upgrade our aging computer infrastructure and to improve Internet connectivity by adding a second T-1 line. These two items were critical to the usability of our infrastructure and access. This Board commitment was very welcome.

The provision of stipends for instructional technology in-service courses for all faculty members is recommended (see our Professional Development Plan). This allocation would support an administrative commitment to “teacher equity” (requiring all teachers within an instructional area to attain a minimum level of mastery of appropriate instructional technology skills.) All teacher specialist teams within grade levels and subject areas need to be at a base level in order to strive for "student equity" (ensuring that all students have the same opportunities to learn–via instruction and access--regardless of which teacher they are assigned.) The specific skills and instructional practices required still need to be articulated.

IMPLEMENTATION: Evaluation Plan

Technology planning should provide an implementation road map for more efficient expenditure of limited resources to attain goals for student achievement. This planning document is a dynamic tool providing guidance for local innovation, as well as a district commitment to prioritize and support the plan over time. The planning process should be evaluated based on measurable objectives, indicated by stated implementation targets in the work plan, measurable student achievement via performance assessments and other means, and by the perception of faculty and staff that the district's vision expressed by the plan is being pursued and achieved.

An effective technology planning process can be summed up in six or seven basic principles. These principles have been adapted by Hopey and Harvey-Morgan (1995) and are based in part on a model developed by Shirley (1988).

Technology planning for education should:

1. Be an organized and continuous process, use a simple straightforward planning model, and result in a document that improves how technology is used for instruction, management, assessment, and communications.
2. Take into account the mission and philosophy of the organization and be "owned" by that organization, its administrators, and instructors.
3. Be broad but realistic in scope, with economical and technically feasible solutions.
4. Involve all the stakeholders—including administrators, instructors, staff members, students, parents, community leaders, and technology experts.
5. Identify the strengths and weaknesses of the organization and how each will impact the implementation of technology.
6. Formalize the procedures and methods for making technology decisions, including the setting of priorities and the purchase, evaluation, upgrading, and use of technology.
7. Be driven by educational goals and objectives rather than by technological developments.

Annual Survey

An annual survey of key indicators by administrators, teacher specialists and parent and student representatives will track how well this plan represents the will and capacity of the stakeholders of Taconic Hills to improve student achievement through technology integration. This survey is attached as ***Appendix 1***.

Note: Appendix 6 is a checklist for items recommended for the district by IBM in a Performance Review as part of our last 5-year plan.

Work Plan

The following draft work plan indicates tasks and roles based on current technology staffing levels and funding. Prioritization of these items and updating of the work plan could be completed during "Principal Technology Leaderships Seminars" in concert with the technology department and school business official. A record of successive versions of the work plan should indicate the commitment and effectiveness of the district in meeting the following technology planning commitments.

IMPLEMENTATION: Technology Planning Work Plan 2005-2008

A. ***Leadership, Staffing and Supervision***

1. Make Technology Integration a District-wide priority
   a. Hold Summer Principal Institute to focus buy-In and plan reinforcement
   b. Use Superintendents Conference Day(s) to promote plan
   c. Plan Special events and incentives to reinforce focus
   d. Encumber a % of Tech Department budget for PD
   e. Create Technology Evaluation Plan: Driven by educational goals
   f. Administer and analyze annual survey of plan's effectiveness
   g. Work with BOE to build stakeholder investment in plan
2. Clarify Administrative Roles in Teacher Supervision
   a. Superintendent's Role – setting vision, providing support, working w/THFA
   b. Principal's Role – requiring integration in observations?
3. IT Specialists: Role Re-Definition
   a. Specify School-based & District-wide duties
   b. Matching required workload to compensation
   c. Establish Coordination & Supervision plan
   d. Set Timelines for negotiation with THFA
4. Plan Instructional Technology Staffing
   a. Set support staffing levels and duties
   b. Set technology integration expectations for instructional staff
   c. Communicate expectations effectively to staff

B. ***Establish, Teach To, Assess and Remediate Skill Standards***

1. Manage & Monitor In-Service Course Use in line with SED requirements?
   a. Superintendents Conference Day(s)
   b. Afterschool Courses during "Period 10", etc.
2. Set Professional Development Targets by Workgroup:
   a. Teachers (Starbase, Office, Email, + Pedagogy Course Sequence)
   b. Administrators (Technology Leadership, Productivity, Planning)
   c. Support Staff (Starbase, Office, Email)
3. Update K-12 Computer Skills Standards
   a. All-student Orientation to Network & Tools
4. Create Performance Assessment / Remediation Plan For
   a. K-12 Student Skills [associated with updated standards]
   b. Teacher Integration Skills [associated with specialist team vision statements]

C. ***Instructional Technology Integration***

1. Set Roles & Support Plan for Assistive Technology
   a. Hardware Knowledge Base
   b. Software Knowledge Base
   c. Referral Support for CST / CSE

2. Integration Implementation Supports
    a. Set Expectations for use of Common Planning Time (Paid? Subs? Duty?)
    b. Work with specialist teams to implement vision statements
3. Curriculum Integration Initiatives for Information & Media Literacy
    a. Critical Thinking about Internet Sources (Davis/Fulmer)
    b. Media Literacy integration into Curriculum (Andell/Koroleski?)
    c. Future of Tech Scouts (if any) // + A/V Scouts
4. AIS Technology Planning
    a. Have SE Staff work with Teachers to Differentiate Instruction with Technology
    b. Focus on AIS Software Implementation Management (Lightspan, etc)

D. Hardware Infrastructure

1. Plan Equipment Deployment To Support Classroom Use
    a. Perform Lab Use Analysis – which teachers, what purposes, how often?
    b. Share Lab Use Analysis with Specialist Teams to seek equity levels
    c. Set Migration Schedule from Macs to PCs in ES & MS Labs
    d. Plan for Mobile Wireless Computing
2. Articulate and Manage Classroom Configuration for Planned Uses
    a. Plan Drive Images with End Users
    b. Establish appropriate Internet Filtering by User
    c. Establish minimum hardware configuration by Team Needs
3. Seek Access Equity – set goals, create and implement plan.
    a. In School: Lab Access / Classroom Access
    b. At Home: Surplus Machines?
4. Articulate deployment strategy (ensures fairness and forethought).
    a. Classroom Clusters (establish 4:1 ratio or less)
    b. Projector for every classroom? Toshiba TDP-SW20U Wireless = $1200
    c. Revisit Digital Imaging Access (camera, videocamera, scanner)
    d. Survey & encumber for computer furniture needs for clusters

E. Information Infrastructure

1. Web Design & Management
    a. Promote teacher websites that support instruction (e.g. webquests, course sites)
    b. Continue promoting Learning Village pages for parent communication.
2. Videoconference Support & Promotion
    a. Create School-level Videoconferencing Liaisons
    b. Promote Videoconferencing in Faculty Meetings - show examples
3. Distance Learning
    a. Explore distance learning possibilities for students (e.g. Marist's Greystone)
    b. Continue to use Blackboard for Faculty In-Services? - COSER needed
4. Data Warehousing: by the Director of Organizational Development
    a. Upload all school testing data to Starbase
    b. Performs in-house analysis of school testing data to improve instruction
    c Upload Test Data to NERIC for regional analysis of school data.

Appendix 1: Technology Planning Effectiveness Assessment

TECHNOLOGY PLAN SUCCESS INDICATORS

_____ _____ _____

Name *Position* *Date*

Instructions: *Check **YES** or **NO** to indicate whether you believe the district has successfully accomplished each goal. If you do not know the answer, check **???.***

NETWORKING

YES	NO	???	
			Connectivity: Students and teachers access rich resources within and beyond the school through the network without significant delay or unreliability.
			Interactivity: Students communicate and collaborate on academic projects using networked and portable sources, including file sharing, forums, blogs, websites and videoconferencing.
			Interoperability: File exchanges between Mac and PC platforms are seamless and well supported.
			Distribution: Stakeholders in school and at home have the ability to add information resources to the school network (e.g. via Learning Village).

HARDWARE

YES	NO	???	
			Access: Computers are easily and readily available to all teachers and students and distributed throughout the school building, in libraries, labs and classrooms.
			Equity: All students have sufficient access to computers in school to meet performance objectives set by the district computer skills framework, and to complete schoolwork enhanced by such access.
			Processing: Available computers have fast processing speed, high disk access, and high color resolution and display.

SOFTWARE

YES	NO	???	
			Flexibility: A user-appropriate range of information sources, products, and services can be accessed within school, despite security and filtering settings.
			Collaboration: Staff access programs to work in groups, build consensus, brainstorm, outline, develop plans, schedule meetings, and monitor and develop joint projects.
			Evaluation: Software is comparatively evaluated pre-purchase for functionality, interoperability, network access and cost by technical staff, for instructional validity by administrators and teachers, and for ease of use and engagement by students.

CLASSROOM INTEGRATION

YES	NO	???	
			Engagement: Students have daily access to tasks, data, and learning opportunities that stimulate thought and inquiry, including complex problems and cases, access to experts, peers, and other learners, rich media resources, and tools for interactive browsing, searching, and authoring.
			Individualization: Users have the opportunity to plan, reflect, make decisions, experience the consequences of actions, change directions, and examine alternative solutions and assumptions, e.g. through problem-based learning and simulations.
			Functionality: Students use a variety of basic tools such as databases, spreadsheets, and word processors, as well as context-specific tools (like science probes and scanners).
			Student Multimedia Production: Students use tools that allow for integrated use of text, graphics, audio, video, and color.
			Programming and Authoring: Students learn to use programming languages in order to create other tools, e.g., the use of HTML to create a web page to share the findings of a research project.
			User Friendliness: Users can access tools, information resources, experiences, and opportunities on demand and use them to solve problems, make decisions, and create products. Users have easy access to as much information as they need at different levels of sophistication.

TECHNICAL SUPPORT

YES	NO	???	
			Teacher Training: Quality training and support to use the technology as well as to solve problems is readily available locally and from remote locations.
			Project Design: Students use computers to facilitate the development of skills related to project design and implementation, e.g., spreadsheets, Computer Assisted Design (CAD) software.
			Online Guidance: Software tools provide the learner with appropriate assistance at the appropriate time. There are intelligent tools that help users work through a set of complex procedures with embedded questions, prompts, and coaches.

COMMENTS

Appendix 2: **TECHNOLOGY PLANNING SCHEDULE 2004-5**

To ensure sufficient representation in technology planning, the Teacher Specialists are functioning as the core of the District Technology Planning Committee, in consultation with the other members of their teams. Each specialist team has designated a "Tech Coordinator", who will assist in the development of skills standards for that team's grade or subject area.

Technology Planning Task	Start Date	End Date
SCD District Technology Day: Intro to Basic Skills and Models, with District Vision Statement & Needs Survey	11/1/04	11/1/04
TCC Create courses for Tech PD Needs Based on SCD Survey	12/4/2004	12/4/04
TCC Obtains Models of Technology Skills Standards for Comparison	12/4/04	12/25/04
Specialists Team Meetings for Input/Review of Technology Plan	12/15/2004	2/18/05
IT Team offers Teacher-Requested Technology PD Sessions	1/3/05	6/20/05
Central Admin Mtg: Reviews Proposals for Tech Budget, IT Staffing, Planned Major Expenditures	2/15/2005	2/15/2005
Secondary Specialist Meeting: Technology Planning Notes From Team Meetings distributed. Specialist Teams ID "Tech Coordinators" who will coordinate Tech Planning for their teams (can be themselves).	3/1/2005	3/1/05
Specialist Teams: Write 1-page "Team Technology Vision and Priorities" (given other team notes, plan objectives).	3/2/2005	3/30/05
IT Team compiles computer skills outlines for topics currently taught.	3/2/2005	3/30/05
TCC integrates Specialist Feedback to draft a revision of district Computer Skills Standards. Revision is circulated among IT Team and specialist 'tech coordinators' for feedback on 3/23.	3/2/2005	3/30/05
Board meeting to finalize Instructional Expenditures articulated for Budget for 2005-6.	3/9/2005	3/30/05
Secondary Specialists Meeting: Specialists submit Team Technology Plans (also via email to TCC), which will be integrated into tech plan.	4/1/05	4/1/05
IT Team meets to align computer skill outlines with draft updated Skills Standards, and plan for re-aligning instruction for 2005-6.	4/1/2005	4/30/05
Primary Specialist Meeting: Technology Planning Notes from team Meetings distributed. Specialist Teams ID "Tech Coordinators" who will coordinate Tech Planning for their teams (can be themselves).	4/6/05	4/6/05
Primary Specialist Teams: Write 1-page "Team Technology Vision and Priorities" (given other team notes, plan objectives).	4/7/2005	4/29/05
Primary Specialists Meeting: Specialists submit Team Technology Plans (also via email to TCC), which will be integrated into tech plan.	5/1/05	5/1/05
ATM meeting reviews updated technology plan & budget and estimates feasibility ratings for planned items.	5/24/05	5/24/05
Prepare Final Draft for Superintendent Sign-Off	5/25	6/1/05
Finalize Plan and Submit to State Education Department	6/1/05	6/30/05

APPENDIX 3: Current Computer Skills Standards K-12

KINDERGARTEN

Students will be able to:

- Model proper use of the keyboard
- Identify where Basic keys are located
- Model how to move Mouse correctly
- Log on to network
- Open/Close Applications
- Demonstrate understanding of Basic Computer Vocabulary
- Demonstrate understanding of Basic Computer parts
- Open/Close Windows
- Demonstrate proper Use of the Click and Drag technique
- Draw Basic Shapes using the computer
- Key in simple text
- Demonstrate use of Drop Down menus
- Use Menu Buttons
- Use a WP application as software tool
- Demonstrate Basic care/use of equipment
- Locate/use letters, numbers, special keys

Applications to be used:

- (Log on Screen)
- Kid Pix
- Claris Works for Kids
- A to Zap

GRADE 1

Students will be able to:

- Model proper use of the keyboard
- Identify where Basic keys are located
- Model how to move Mouse correctly
- Log on to network
- Open/Close Applications
- Demonstrate understanding of Basic Computer Vocabulary
- Demonstrate understanding of Basic Computer parts
- Open/Close Windows
- Demonstrate proper Use of the Click and Drag technique
- Draw Basic Shapes using the computer
- Key in simple text
- Demonstrate use of Drop Down menus
- Use Menu Buttons
- Use a WP application as software tool
- Demonstrate Basic care/use of equipment
- Locate/use letters, numbers, special keys
- Save/Retrieve files
- Key in word lists

Applications to be used:

- (Log on Screen)
- Kid Pix
- Claris Works for Kids
- A to Zap
- Student Writing Center
- Reader Rabbit
- Math Rabbit

GRADE 2

Students will be able to:

- Model proper use of the keyboard
- Identify where Basic keys are located
- Model how to move Mouse correctly
- Log on to network
- Open/Close Applications
- Demonstrate understanding of Basic Computer Vocabulary
- Demonstrate understanding of Basic Computer parts
- Open/Close Windows
- Demonstrate proper Use of the Click and Drag technique
- Draw Basic Shapes using the computer
- Key in simple text
- Demonstrate use of Drop Down menus
- Use Menu Buttons
- Use a WP application as software tool
- Demonstrate Basic care/use of equipment
- Locate/use letters, numbers, special keys
- Save/Retrieve files
- Key in word lists
- Key in simple sentences
- Perform "spell check" operations
- Identify the "Home Row" keys on a keyboard

Applications to be used:

- (Log on Screen)
- Kid Pix
- A to Zap
- Student Writing Center
- Reader Rabbit
- Math Rabbit

GRADE 3

Students will be able to:

- Demonstrate proper keyboarding skills/technique
- Use a Word Processing package
- Perform "spell check" operations
- Explain the benefits of Word Processing
- Identify the components of a system as, input, output or processing devices
- Create, save, retrieve and edit and print a Word Processing document
- Recognize Word Processing terms and functions
- Demonstrate the idea of "Home Row" keyboarding

Applications to be used:

- MS Word
- Type to Learn
- Internet Explorer
- Student Writing Center
- Kid Pix

GRADE 4

Students will be able to:

- Demonstrate proper keyboarding technique and skills
- Change their passwords
- Identify components of a system as input, output or processing devices
- Open/Close applications (Mac vs PC)
- Open/Close/Resize windows (Mac vs PC)
- Perform the click and drag technique
- Use Pull Down menus
- Save/Retrieve files
- Perform Spell Check
- Identify the benefits of Word Processing
- Create/Save/Retrieve/Edit./Print Word Processing documents
- Recognize Word Processing terms and functions
- Make/edit an "idea map"
- Make/edit a historical map
- Perform Internet Searches
- Copy pictures and text from a web site
- Enter/Edit data in a spreadsheet

Applications to be used:

- MS Word
- Type to Learn
- MS Excel
- Inspiration
- Internet Explorer
- mapmaker's Toolkit
- Timeliner

GRADE 5

Students will be able to:

- Change their passwords
- Identify components of a system as input, output or processing devices
- Open/Close applications (Mac vs PC)
- Open/Close/Resize windows (Mac vs PC)
- Perform the click and drag technique
- Use Pull Down menus
- Save/Retrieve files
- Perform Spell Check
- Identify the benefits of Word Processing
- Create/Save/Retrieve/Edit/.Print Word Processing documents
- Recognize Word Processing terms and functions
- Format a document (tabs, margins, spacing, etc.)
- Use Drawing Tools (MS Word)
- Perform Spell/Grammar checks
- Make/edit a "story web"
- Make/edit an "idea map"
- Make/edit a historical map
- Perform Internet searches
- Copy pictures and text from a web site
- Enter/Edit data in a spreadsheet
- Copy pictures/text from web sites
- Create/Edit Bibliographies
- Create/Edit charts from date in a Spreadsheet
- Create/Edit a PowerPoint slide show
- Create/Edit a HyperStudio presentation

Applications to be used:

- MS Word
- MS Excel
- MS Power Point
- Inspiration
- Internet Explorer
- Mapmaker's Toolkit
- Timeliner
- Type & Talk
- HyperStudio

GRADE 6

Students will be able to:

- Create/Save/Retrieve/Edit/Print a Word Processing document
- Format a document (tabs, margins, spacing, etc.)
- Use Drawing Tools (MS Word)
- Perform Spell/Grammar checks
- Make/edit a historical map
- Perform Internet searches
- Copy pictures/text from web sites
- Create/Edit Bibliographies
- Enter/Edit data in a spreadsheet
- Create/Edit charts from date in a Spreadsheet
- Manipulate Spreadsheet data; formulas/functions
- Create/Edit a PowerPoint slide show
- Create/Edit a Hyperstudio presentation

Applications to be used:

- MS Word
- MS Excel
- MS Power Point
- Inspiration
- Internet Explorer
- Type to Learn
- HyperStudio
- Astro Algebra
- Adobe Photo Deluxe
- Graphic Converter
- HP Precision Scan Pro

GRADES 7-8

Students will be able to:

- Demonstrate how to send and receive e-mail.
- Use the computer network to view school-related documents.
- Use data and the district's computer network legally and ethically with respect to software licensing, authorized use of the network and electronic communications.
- Use page design and page layout features [such as headers, footers, margins, page orientation] to format a document.
- Create a presentation for a content-area related assignment at least once per quarter.
- Use information technology for at least one science lab assignment per semester.
- Demonstrate skillful use of automated catalog software associated with the library media center.

Applications to be used

- MS Word
- MS Excel
- MS Power Point
- MS Publisher
- MS Access
- Internet Explorer
- MS Front Page / Macromedia Dreamweaver
- Microtype
- Adobe Photoshop Elements
- Omni Page Pro

GRADES 9-12

Students will be able to:

- Identify and appropriately uses available information technology equipment.
- Use the district's information technology network to access appropriate and useful information in all subject areas.
- Use enhanced features of word processing, desktop publishing, database and Web-browsing software.
- Publish an extended research report for staff, community and peer review.

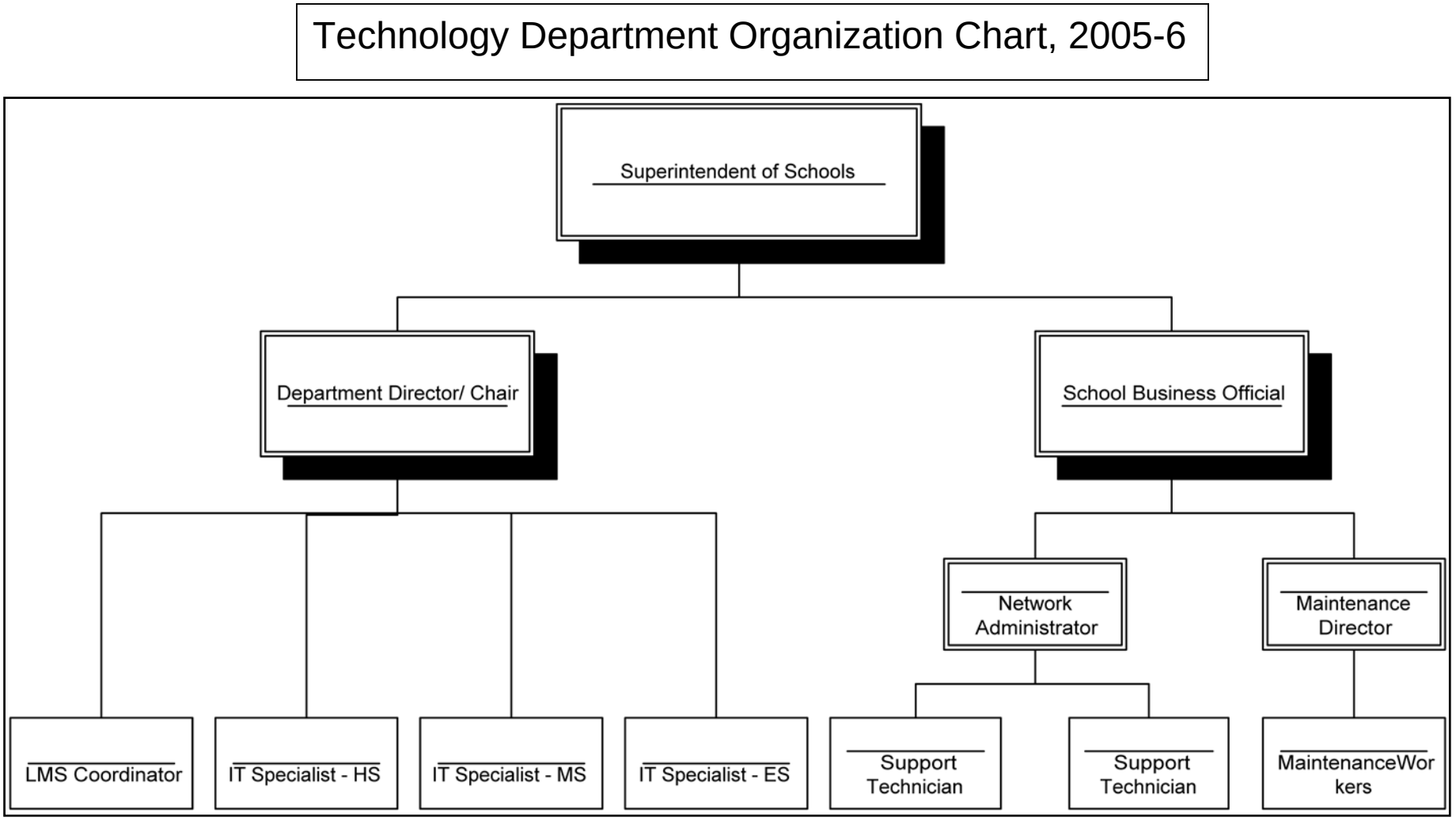
Applications to be used

- MS Word
- MS Excel
- MS Power Point
- MS Publisher
- MS Access
- Internet Explorer
- MS Front Page / Macromedia Dreamweaver
- Microtype
- Adobe Photoshop Elements
- Omni Page Pro

Appendix 4: PROGRESS ON IBM RECOMMENDATIONS

Objective (Status: C=Complete, P=Partial, N=Not Done, R = Rejected	S
1. Reorganize the technology organizational structure to increase efficiency and effectiveness.	P
2. Direct the information technology specialists to develop integrated technology curriculum guides including accountability standards, and deploy a full-time information technology specialist for instructional coordination and staff training.	P
3. Develop and publish written policies and standard opening procedures for the use and management of technology.	P
4. Require real-time financial accounting information be available for building administrators and direct office administrators.	C
5. Develop, implement, and adhere to a year-round technology budget calendar.	P
6. Purchase a license and implement the finance manage 2000 remote requisitioning program.	N
7. Eliminate the dual platform standard and adopt the pc platform as the district's only technology platform.	N
8. Eliminate Macintosh and fixed labs and add mobile labs to the technology program.	N
9. Expand the content of district website and provide weekly updates.	C
10. Identify and implement methods to maximize the use of the starbase student information system and issue a request for information on alternatives to starbase.	P
11. Create a central data store with user access limited to key personnel.	C
12. Develop guidelines for, and actively involve, student representatives on the district technology committee.	N
13. Implement separate VLAN's to improve network security and avoid network congestion.	P
14. Establish a link between the transportation department and the school system via dialup connection.	C
15. Establish a network within the transportation department.	C
16. Develop a capacity plan as well as future application deployment objectives to reduce the number of servers being managed.	C
17. Develop, implement and test a network backup plan.	C
18. Contact with capital region BOCES for FM 2000 server support.	C
19. Reinstate the service request system with data captured in formats for analysis and performance metrics.	P
20. Expand Microsoft Outlook leveraging the calendaring application for resources and integrate it with the ARAMARK Servicemaster application.	P
21. Leverage the school web server for day sheet information.	R
22. Distribute a brochure of library technology services available to teachers.	P
23. Develop a policy for, and implement a technology asset management system addressing, software acquisition and licensing, hardware management, and implement a teat lab.	P
24. Develop and implement a policy and related procedures for system security.	P
25. Actively utilize District-owned videoconferencing equipment.	P
26. Require teachers and administrators develop specific standards, success measurements, and timelines.	N
27. Develop and implement a technology refresh plan.	P
28. Develop an implement a measurement plan to assess progress in achieving the technology plan objectives.	P
29. Develop and operational technology plan including disaster recover procedure, testing the plan regularly.	P
30. Establish a Time Server to support time synchronization.	N
31. Negotiate with a wireless communications provider for installation of wireless communication tower where the District is the Lessor.	P

Appendix 5: Technology Department Organization Chart



Appendix 6: Technology Related Board Policy

5230 SUBJECT: ACCEPTANCE OF GIFTS, GRANTS AND BEQUESTS TO THE SCHOOL DISTRICT

Gifts to the District/Board of Education

The Board may accept gifts, grants and/or bequests of money, real or personal property, as well as other merchandise which, in view of the Board, add to the overall welfare of the School District, provided that such acceptance is in accordance with existing laws and regulations. However, the Board is not required to accept any gift, grant or bequest and does so at its discretion, basing its judgment on the best interests of the District. Furthermore, the Board will not accept any gift, grant or bequest which constitutes a conflict of interest and/or gives an appearance of impropriety.

At the same time, the Board will safeguard the District, the staff and students from commercial exploitation, from special interest groups, and the like.

The Board will not accept any gifts or grants which will place encumbrances on future Boards, or result in unreasonable additional or hidden costs to the District.

The Board of Education will not formally consider the acceptance of gifts or grants until and unless it receives the offer in writing from the donor/grantor. Any such gifts or grants donated to the Board and accepted on behalf of the School District must be by official action and resolution passed by Board majority. The Board would prefer the gift or grant to be a general offer rather than a specific one. Consequently, the Board would suggest that the donor/grantor work first with the school administrators in determining the nature of the gift or grant prior to formal consideration for acceptance by the Board. However, the Board, in its discretion, may direct the Superintendent of Schools to apply such gift or grant for the benefit of a specific school or school program.

The Board is prohibited, in accordance with the New York State Constitution, from making gifts/ charitable contributions with School District funds.

Gifts and/or grants of money to the District shall be annually accounted for under the trust and agency account in the bank designated by the Board of Education.

All gifts, grants and/or bequests shall become School District property. A letter of appreciation, signed by the President of the Board and the Superintendent, may be sent to a donor/grantor in recognition of his/her contribution to the School District.

Gift Giving to District Employees

The Board of Education recognizes that gift giving, especially during the holiday season, may be a common practice for many District employees. While the giving or exchanging of gifts may be acceptable among staff members, the Board strongly encourages District employees and students to show appreciation through written notes or greeting cards.

Additionally, all gifts exceeding $75.00 from business contacts to District employees will be returned or presented to the Board of Education for their acceptance and direction regarding use.

New York State Constitution Article 8, Section 1
Education Law Sections 1709(12) and (12-a)
and 1718(2)
General Municipal Law Section 805-a(1)

8270 SUBJECT: INSTRUCTIONAL TECHNOLOGY

The Board of Education recognizes its responsibility to further the District's educational goals through the use of appropriate and high quality technological materials and equipment. For the purpose of this policy, technology refers to computers, interactive videodiscs, Compact Disc-Read Only Memory (CD-ROM) devices, local area networks, satellite transmission and other telecommunications equipment.

Continuing advances in technology are bringing about changes that have an increasing impact on the way we obtain, process, evaluate and use information. Therefore, the District is committed to:

a) A comprehensive staff development program to ensure appropriate and effective use of technology.

b) The preparation of students to utilize multiple types of technology.

c) The integration of technology within and across all curriculum areas.

d) The equitable distribution and access to technological equipment and materials for all students.

e) The promotion of technology as an alternative to traditional methods of gathering, organizing and synthesizing information.

f) The provision of sufficient funds, within the budgetary constraints of the Board, for the implementation of technology instruction.

The Board directs the Superintendent or his/her designee to assess the technological needs of the District's instructional program, research and review current materials and make recommendations to the Board.

Adopted: 7/2/03

8271 SUBJECT: THE CHILDREN'S INTERNET PROTECTION ACT: INTERNET CONTENT *FILTERING/SAFETY POLICY*

In compliance with The Children's Internet Protection Act (CIPA) and Regulations of the Federal Communications Commission (FCC), the District has adopted and will enforce this Internet safety policy that ensures the use of technology protection measures (i.e., filtering or blocking of access to certain material on the Internet) on all District computers with Internet access. Such technology protection measures apply to Internet access by both adults and minors with regard to visual depictions that are obscene, child pornography, or, with respect to the use of computers by minors, considered harmful to such students. Further, appropriate monitoring of online activities of minors, as determined by the building/program supervisor, will also be enforced to ensure the safety of students when accessing the Internet.

Further, the Board of Education's decision to utilize technology protection measures and other safety procedures for staff and students when accessing the Internet fosters the educational mission of the schools including the selection of appropriate teaching/instructional materials and activities to enhance the schools' programs; and to help ensure the safety of personnel and students while online.

However, no filtering technology can guarantee that staff and students will be prevented from accessing all inappropriate locations. Proper safety procedures, as deemed appropriate by the applicable administrator/program supervisor, will be provided to ensure compliance with the CIPA.

In addition to the use of technology protection measures, the monitoring of online activities and access by minors to inappropriate matter on the Internet and World Wide Web *may* include, but shall not be limited to, the following guidelines:

a) Ensuring the presence of a teacher and/or other appropriate District personnel when students are accessing the Internet including, but not limited to, the supervision of minors when using electronic mail, chat rooms, and other forms of direct electronic communications. As determined by the appropriate building administrator, the use of e-mail and chat rooms may be blocked as deemed necessary to ensure the safety of such students;

b) Monitoring logs of access in order to keep track of the web sites visited by students as a measure to restrict access to materials harmful to minors.

c) The dissemination of the District's Acceptable Use Policy and accompanying Regulations to parents and students in order to provide notice of the school's requirements, expectations, and student's obligations when accessing the Internet. Parental and/or student consent, as may be applicable, shall be required prior to authorization for student use of District computers. In compliance with this Internet Safety Policy as well as the District's acceptable Use Policy, unauthorized access (including so-called "hacking") and other unlawful activities by minors are prohibited by the District; and student violations of such policies may result in disciplinary action;

d) Appropriate supervision and notification to minors regarding the prohibition as to unauthorized disclosure, use and dissemination of personal information regarding such students; and

The determination of what is "inappropriate" for minors shall be determined by the District and/or designated school official(s). It is acknowledged that the determination of such "inappropriate" material may vary depending upon the circumstances of the situation and the age of the students involved in online research.

The terms "minor," "child pornography," "harmful to minors," "obscene," "technology protection measure," "sexual act," and "sexual contact" will be as defined in accordance with CIPA and other applicable laws/regulations as may be appropriate and implemented pursuant to the District's educational mission.

**Under certain specified circumstances, the blocking or filtering technology measure(s) may be disabled for adults engaged in bona fide research or other lawful purposes. The power to disable can only be exercised by Central Office Administratioin.*

The School District shall provide certification, pursuant to the requirements of CIPA, to document the District's adoption and enforcement of its Internet Safety Policy, including the operation and enforcement of technology protection measures (i.e., blocking/filtering of access to certain material on the Internet) for all School District computers with Internet access.

The District has provided reasonable public notice and has held at least one public hearing or meeting to address the proposed Internet Content Filtering/Safety Policy prior to Board adoption. Furthermore, appropriate actions will be taken to ensure the ready availability to the public of the District's Internet Content Filtering/Safety Policy, as well as any other District policies relating to the use of technology.

47 United States Code (U.S.C.) Sections 254(h) and (l)
47 Code of Federal Regulations (C.F.R.) Part 54

**District Option*
Adopted: 7/2/03

8320 SUBJECT: SELECTION OF LIBRARY AND AUDIOVISUAL MATERIALS

The Board of Education agrees that the responsibility of the school library is:

a) To provide materials that will enrich and support the curriculum, taking into consideration the varied interests, abilities and maturity levels of the students served.

b) To provide materials that will stimulate growth in factual knowledge, literary appreciation, aesthetic values and ethical standards.

c) To provide a background of information that will enable students to make intelligent judgments in their daily lives.

d) To provide materials on opposing sides of controversial issues so that young citizens may develop, under guidance, the practice of critical reading and thinking.

e) To provide materials representative of the many religious, ethnic, and cultural groups and their contribution to our American heritage.

f) To place principle above personal opinion and reason above prejudice in the selection of materials of the highest quality in order to assure a comprehensive collection appropriate for the users of the library.

In interpreting these principles, the following will apply:

a) Broad and varied collections will be developed systematically by the librarian and the audiovisual specialist, based on recommendations of the professional staff and suggestions of students and parents. Final approval will be made by the building principal.

b) Qualitative standards of selection involving factual accuracy, authoritativeness, artistic quality and appeal will be applied by librarians and audiovisual specialists before purchases are made.

c) Materials will not be excluded because of the race, nationality, political opinions or religious views of the author.

d) Materials will be continuously re-evaluated in relation to changing curriculum and instructional needs. Worn out, out-dated materials will be discarded.

Rules of the Board of Regents Section 21.4

Adopted: 7/2/03

APPENDIX 7: Needs Assessment Documents

TO: SECONDARY/ SUBJECT AREA GRADE LEVEL TEAMS

FROM: [TECHNOLOGY COORDINATOR]

RE: NEEDS ASSESSMENT: SECONDARY AND SUBJECT AREA SPECIALIST TEAMS

DATE: 1/2005

Possible Goals:

1) **PROJECT DEVELOPMENT:** Each teacher finds a place in their curriculum where technology can be incorporated to motivate the students and address the standards. This can include parallel or sequential projects, individual or collaborative.
2) **INTERDISCIPLINARY PROJECTS:** [Suggestions specific to department/grade level]
3) **ACTION RESEARCH:** Department identifies technology practices worth exploring, developing, documenting and sharing as "Action Research".
4) **EQUITY:** Department develops a sense of what all students should experience, regardless of which teacher they are assigned.
5) **CURRENT PROJECTS:** [Specific to Department]

Modes (for Action Research / Professional Development / Pilot):

- Presentation with Projectors [Suggestions]
- Small Group Work with Clusters [Suggestions]
- 1:1 Computing: Webquests, other projects [Suggestions]

Technology Curriculum Coordination

- What skills are important for your students' success?
- What skills are your students needing support in?
- How should we plan to monitor and support these skills?

Professional Development

- Best Practices to Showcase?
- Software to Explore?
- Skills to train/reinforce?

Connecting to the Kids' Digital World

- Videoconferencing Projects & Collaborations
- Regional Contests
- Virtual Field Trips
- Webquests

Project Brainstorm:

- Authentic Projects
- Problem-Based Learning
- Interdisciplinary
- Research Projects

Needs Assessment – HS (2004)

A. Comfort Scale: Circle the level that best indicates your comfort as a computer user.

A. How do you turn it on?
B. I can use a computer for word processing, but do not feel comfortable with other uses.
C. I check email sometimes and use the Internet when I need to.
D. I use the computer regularly at school. When something goes wrong, I know some things to look or. Sometimes I get stuck and give up.
E. I often have several windows open at the same time. I customize settings and control panels. I use keyboard shortcuts (like CTRL+C). I feel confident enough to tcach others some basic operations.

B. Skill Scale: Circle the level that best indicates what you've accomplished with Learning Village so far.

A. What's Learning Village?
B. I started a page once, but never finished it. I haven't logged in to Learning Village since then.
C. I completed a page last year, but haven't been back since. I'd need a refresher.
D. I have completed a page and updated it a few times. I know how to upload pictures and am comfortable using the template.
F. I have an up-to~date page. I have explored most of the functions available through the template, and have pasted some HTML tags.

C. Leichert Scale: The following is a list of programs that are available at Taconic Hills. Please use the following Leichert scale to rate your comfort level with each program.

1 - I do not know what this program is.
2 - I know what this program is, but I do not know how to use it.
3 - 1 understand the basic operations of the program.
4 - 1 am proficient in the use of this program.

__ Word Processing: Word
__ Email: Microsoft Outlook
__ Web Browsing: Internet Explorer
__ Spreadsheets: Excel
__ Graphic Design: Photo Editor / Photoshop
__ Presentation: PowerPoint
__ Database: Access, Filemaker Pro
__ Desktop Publishing: Publisher / Pagemaker
__ Web Design: FrontPage / Dreamweaver / Netscap
__ Conceptualization: Inspiration 6 / Visio 2000

D. Priorities: Please circle ONLY the top three issues that offer you the greatest challenges related to computer technology in teaching your course.

a. Wide range of student computer skill levels
b. Poor supplemental teaching aids
c. Outdated or obsolete equipment
d. Lack of equipment (computers, projector, etc.)
e. Lack of timely technical support
f. Lack of computer access for absentee students
g. Inadequate student assessment software (CAI)
h. Lack of professional development opportunities
i. Lack of electronic tutorials or simulations
j. Lack of class management tool (gradebook, etc.)

E. Narrative (on back): Considering your responses to the previous question or others, please use the back of this page to clarify or make recommendations about how to help you teach your course more effectively with computer technology.

10-Minute Technology Needs Assessment - MS

1. How about Computer-Assisted Instruction for AIS (e.g. Compass Learning)?

a. What's that? b. Bad idea c. Sounds good d. Great idea! e. I'll help evaluate software

2. How can we utilize Synrevoice (automatic calling home program) better?

a. What's Synrevoice? b. It seems to work fine now c. See back for my suggestion

3. Your "teacher station" does not:

a. work b. print to my printer c. access email d. have software I need e. have any problems.

4. What software/hardware repairs/upgrades are needed in your classroom?

a. none b. I've placed a work order. c. my work order is overdue. d. See back for details

5. How is the tech work order system working?

a. haven't written one b. work was done on time c. an order is overdue. d. See back

6. What software training do you need?

a. email b. Powerpoint c. "One-Computer Classroom" d. "Webquests" e. See back

7. What student needs are you aware of?

a. more keyboarding practice b. Internet/School Network use orientation, c. Mac/PC transfers

8. Is the S250 lab available and functioning to serve full classes?

a. haven't used it b. it works fine for my needs c. there are some problems – Sandy knows

d. there are insurmountable problems and I won't use it until they're solved d.

9. Would you like a cluster of five iMacs in your classroom?

a. no. b. maybe – why? c. yes, but I'd need training d. Yes. I already have ____ iMacs.

10. How should the Middle School website grow? (circle any that apply)

a. more student work showcased b. more teacher projects showcased

c. more info about the school d. other (see back) e. I'm willing to help

Technology Needs Assessment – Elementary (2004)

1. How about Computer-Assisted instruction for AIS to help kids prepare for the 4th grade assessments and build their ELA & Math skills (e.g. Compass Learning)?

a. What's that? b. Bad idea c. Sounds good d. Great idea! e. I'll help evaluate software

2. How are we doing with Student Technology Skill Building?

a. I don't use computers with my students so I can't say.
b. My students seem to use computers well for their age level.
c. My students show significant disparities in ability levels (keyboarding, OS proficiency)
d. Disparities in ability levels are affecting student performance in my class.
e.

3. Windows Platform computers for Teachers - Why want them? Who wants them?

a. No PCs for me, thanks!
b. Train me in Windows OS so I know what else it can offer.
c. I'll take any classroom computers you have if they're faster than iMacs.
d. I would prefer Windows if the students had PCs in the lab.

4. How is the tech work order system working?

a. haven't written one b. work was done on time c. an order is overdue. d. See back

5. What software training do you need? (When? _am _lunch _pm _summer)

a. Email b. Powerpoint c. "One-Computer Classroom" d. "Webquests" e. Other--See back

6. How are the projectors working out for "One Computer Classroom" activities?

a. Never tried b. Had a bad experience – won't try again c. I'm exploring. d. Great! See back.

7. Would you like a cluster of five iMacs/PCs in your classroom?

a. no. b. maybe – why? c. yes, but I'd need training d. Yes. I already have ____ iMacs.

8. GradeQuick is an grading program that integrates with Starbase. Interested?

a. no – I prefer bubble sheets. b. I am comfortable with EasyGradePro / other software.

c. maybe – what would it do for me? d. Yes, but I would need training. e. I already use it.

9. What's going on in the Library Media Lab?

a. I don't know – I stay out of there. b. The librarian has some software the kids use

c. I plan activities with the librarian d. I run my own activities in the lab (see back)

Appendix 8: SOFTWARE PURCHASE APPROVAL FORM

Teacher:_____ Date:_____

Grade/Department/Specialty:_____ Licenses Needed: _____

Software Title: _____

Vendor:_____ Web address: _____

Requires hardware upgrade? ___NO ___YES (attach specs) Server required? ___ Yes ___ No

Software Price (per license): _____ Licenses needed: ___ Total Cost Estimate: _____

For what instructional uses are you requesting the purchase of this software? (If this is an Integrated Learning System, complete the attached **ILS Purchase Criteria** sheet).

_____

_____

_____

_____

_____

_____

_____

What alternate software titles have you evaluated before making this recommendation?

_____

_____

APPROVALS

A. Principal Initials: _____ Approved: ____ Disapproved: ____ Explanation Attached? _____

Date: _____ Signature: _____

B. Technology Dir. Initials: ___ Approved: ___ Disapproved: ___ Explanation Attached? _____

Date: _____ Signature: _____

C. School Business Official Initials: ___ Approved: ___ Disapproved

Date: _____ Signature: _____

Appendix 9: Computer Drill and Practice Tutorials: Are They Effective?

Sonia Jurich, TechKnowLogia, March/April, 2001, www.TechKnowLogia.org

What is CAI?

Drill and practice software, generally called ComputerAssisted Instruction (CAI), has been used in education for over 30 years. From simple mathematics tutorials, these programs expanded their reach to a variety of academic and vocational subjects, and to all levels of the educational structure, from elementary grades to higher education. They are also frequently used for job skill development and military training. The program functions as an automated tutor. The topic to be taught is divided into modules of increasing complexity. The students work at their own time and pace, starting with the basic modules. At the end of each module, the students must complete an evaluation. If they answer correctly a determined percentage of questions, they can move to a more advanced module. Otherwise, they may repeat the module until they have mastered the targeted concept or skill (some programs offer remedial modules).

CAI utilizes the capacity of computer technologies to: provide immediate feedback, perform repetitive tasks with equal precision, and store large amounts of data. The program enables the students to practice the skills or concepts as many times as necessary until mastery is achieved. The students can work at home or elsewhere in out-of-school hours, saving classroom time for more complex and creative activities. Moreover, the students can work on their own, without the pressure from their more advanced peers. The programs are designed to provide encouragement through supportive statements when the students respond to the questions correctly, or sympathetic expressions and a chance to correct when the answers are wrong. Many programs have an information management system that keeps a history of the students' activity, including the number of attempts to pass each module, the types of errors made or the time spent on each question. Teachers can use this history to develop an individualized plan that fits each student's needs. Most recent CAI software integrates features that encourage activities beyond the simple drill-and-practice, such as simulations, graphing and even modeling.

What does evaluation say about CAI?

Evaluations of computer tutorials tend to be inconsistent, ranging from "significantly improved" to "no statistical significance found." Cotton (2000) reviews 35 studies related to the use of CAI conducted throughout the 1980s, when the programs were popular. Overall, results were encouraging. When compared to students receiving only traditional, teacher-direct instruction, students who had the teacher instruction supplemented by CAI were found to learn faster – sometimes as much as 40 percent faster – and had better retention rates (measured through higher scores in delayed tests). They also improved their attitudes toward school and their potential as learners. CAI students had better attendance rates, showed higher motivation and cooperated better with peers.

Kulik (1994) reviewed approximately 550 individual studies conducted between 1978 and 1991 using a meta-analysis technique. His findings are similar to Cotton's: on average, students who use CAI learn faster and retain more than students who had only traditional instruction. In addition, they develop more positive attitudes toward school. Evaluators for the Carnegie Learning's Cognitive Tutor, a tutorial software for mathematics, compared public school students in two U.S.A. cities: a group used the Tutorial and a comparison group received only traditional instruction. Student achievement was compared using national standardized tests. On average, students who used the Algebra I Tutorial performed 85 percent better on assessments of complex mathematical problem solving and thinking, and 14 percent better on standardized assessments of basic mathematical skills than their peers who did not use the program. Students who had completed the three-course sequence (Algebra I, Geometry and Algebra II) performed on average 30 percent better on the Third International Mathematics and Science Study (TIMSS) assessment, and 227 percent better on real-world problem solving assessments.[1] A smaller study compared two groups of students attending a calculus course: one group used computer tutorials to enhance the lessons, and the other received only teacher-direct instruction.

When the groups were compared, the students who used the software showed improved understanding of key concepts (Cooley, 1997). In contrast, a review of six years of qualitative and quantitative studies on the use of computer tutorials for science teaching questioned the reliability of CAI results. According

to this study, advancement through the program levels did not ensure that the student had mastered the concepts, nor the lack of advancement reflected that mastery had not been achieved (Hativa, 1994).

Rather than asking whether CAI improves student's academic achievement in general, more recent studies are focusing on the behavior of specific types of tutorials, groups of students and types of skills. Wheeler & Regian (1999) looked at the use of a computer tutorial to teach word problem solving to ninth-grade students. The study compares 639 students divided into three groups: a group received traditional instruction, a second group received instruction plus a simple word problem computer tutorial, and the third group received instruction plus a word problem software containing active instruction. The research found that students using the active tutorial improved significantly more than the other two groups. Although improvement occurred in both abstract and concrete reasoning, the gains in the abstract reasoning were not as large as the gains in the concrete subtest. González & Birch (2000) compared three different tutorial approaches to introducing elementary statistics concepts to college students. The approaches included traditional paper-and-pencil tutorial, basic tutorial software, and multimedia software. In the post-test, students using tutorials showed a better comprehension of statistics than those who did not use tutorials. Those using the basic tutorial program also finished the tests much faster.[2] The use of computer tutorial to provide or reinforce basic concepts in complex subjects is also the topic of a study by Washington, Parnianpour & Fraser (1999). The authors utilized the tutorial in an introductory college class on biomechanics and verified a significant improvement in basic concepts for students using the tutorial, although differences in final grades between control and treatment groups were not significant.

What should we conclude?

It is clearly tempting to say that "more research is necessary," the self-protective statement so common among researchers. No one will err by requiring more research on anything, but research is a too vague word for a field with so many intervening variables. The term CAI is not universal and may indicate programs other than drill and practice tutorials. Likewise, tutorials may receive different labels. Evaluations of CAI programs may be comparing quite different approaches, particularly because many studies do not describe the software used. Some tutorials are limited to basic memorization and reinforcement activities, while others can be quite sophisticated, emphasizing higher-order thinking skills activities. For instance, the Mathematical Abstract Reasoning Tutor, MARTHA, is a computer tutorial that focuses on abstract reasoning on mathematics, including modeling (Wheeler & Regian, 1999).

The quality of the programs also varies. Not all drill-and-practice software have undergone research and testing to ensure efficacy, and many are not regularly updated. Researchers who use standardized tests to assess the impact of tutorials must assess the relationship between what is taught in the program and what is required in the test. Washington et al (1999) comment that the content of the tutorial used in their study corresponded only minimally to the material required for the midterm and final exams. In this case, the treatment and control groups were being compared with a measure that did not reflect the treatment.

Which skills seem to respond better to tutorials and for whom tutorials work better, or do not work at all, are two questions that merit further attention. Burchfield & Gifford (1995) tested the efficacy of tutorial software to teach integrated science process skills (control variables, define operationally, formulate hypotheses, interpret data, experiment and formulate models). The tutorial did not show significant improvement in the targeted skills, but students using the program scored much better than a control group on measures related to ability to graph and interpret data. Cotton's review indicates that CAI programs are particularly useful for students who require structured content and flexible learning time, such as children and youth with disabilities and those struggling academically. For this group, the software is a patient tutor that is never angry or frustrated, never embarrasses the child in front of others, and never forgets to say a word of praise or encouragement (Cotton, 2000). Yet, this effect may be relevant only in the case of younger users and may have no significance for college students (Burchfield & Gifford, 1999).

Should we adopt computer tutorials?

If planning to buy computer tutorials, teachers and educators should carefully examine the programs focusing on:

- Program objectives – the tutorial's objectives must correspond and complement the educational goals defined by the teacher;
- Purpose for use – CAI is a tool, not a replacement for a well-planned learning experience; research suggests that the program is more effective when used to reinforce or clarify topics that were discussed in class;
- Cost-effectiveness – a more expensive program does not necessarily mean a better one; the software should be evaluated against educational objectives and potential benefits.
- Potential use – how frequently will the program be used? Where? Does it take from classroom time or complement it? Does the school have a place where students can use the program outside classroom time? Research suggests that computer tutorials improve basic skills in mathematics and science for students in all grade levels, from elementary to undergraduate school.3 However, they are not a panacea that will ensure successful learning for all students in all situations, but simply a tool that can be employed to boost students' academic achievement and interest. As with any tool, the final success will depend on how well it is used.
- Content quality – is the content correct and updated? Is the level of difficulty appropriate for the students? How well is the content integrated with the curriculum and the lesson plan?
- Presentation quality – uninteresting software will not effectively motivate the students, while a fancy software with weak project content will not help;
- Program requirements – before buying the tutorial, it is important to examine hardware requirements, particularly memory requirements.

References

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1 A summary of the evaluation is found at www.carnegielearning.com/k12/mathematics/research/whitepapers; the evaluators are part of the Carnegie Learning organization.

2 The authors recognize that hardware limitations hurt the efficiency of the multimedia module.

3 This review did not look into the effectiveness of CAI for skill training and graduate studies.

APPENDIX 10: Migration to One to One Computing (Draft Proposal)

ONE-to-ONE COMPUTERS: Advantages

- Stop purchasing textbooks to save money (and student backs)
- Students can use computers at home, providing more potential learning time.

ONE-to-ONE COMPUTERS: Disadvantages:

- When students lean against backpacks, screens can be damaged. Expect 8% breakage (see http://www.mitchellinstitute.org/finalLaptopreport.doc - out of 285 machines, 40 required screen replacements). **Workaround**: district/parents purchase insurance.
- Machines are virus-prone. Workaround: use Linux (saves software $$$).
- Need to address inappropriate uses. Workaround: Internet filtering.
- Need to arrange for low-cost computer access at home, factored into district contribution for low-income parents (Title I Funding).

POSSIBLE PROGRESSION to One-to-One computing for the Middle School

1. Year 1: All networked Powermac G3s removed from S250 and deployed in S202 (iMacs deployed to Primary classrooms), replaced with laptops. Students in Grade 5 begin instruction in Windows OS, Word and Powerpoint using these laptops, so that at Grade 6 they are ready for classroom access.
2. Year 2: Mobile Laptops/carts purchased for Grade 6, which move to subject area classrooms for coordinated projects.
3. Year 3: One-to-one purchase at Grade 7 – all students have laptops which they bring along to classes. Hard-bound textbooks are eliminated for Grade 7, replaced with electronic versions.
4. Year 4: Computers in S144 are deployed to Library, since all Grade 7,8 students have laptops. Hard-bound textbooks are eliminated for Grade 8, replaced with CDs.
5. Year 5: Laptops returned to replace those in S202.

ONLINE RESOURCES FOR ONE TO ONE COMPUTING

http://www.edutopia.org/onetoone: **The Power of One-to-One Computing**. Links to original GLEF articles, video documentaries, and multimedia features on some of these schools, along with interviews with educators and experts on the potential of one-to-one computing to transform teaching and learning.

http://www.thejournal.com/magazine/vault/A2852.cfm: **One to One Computing Tools for Life,** T.H.E Journal (Technology in Higher Education) May, 2000

http://www.mcrel.org/topics/productDetail.asp?productID=182 **Is a Laptop Initiative in Your Future?** The Mid Central Regional Education Laboratory's latest policy brief examines the rise of one-to-one computing, along with its benefits, costs, and other associated issues.

Appendix 11: Technology Planning Support Sites

NetDayCompass (netdaycompass.org)
Sponsored by NetDay, the national nonprofit dedicated to expanding educational technology, this site is an excellent and easy-to-use place for committees to start.
Technology Briefs for No Child Left Behind Planners
(www.neirtec.org/products/techbriefs/index_html.asp)
The Northeast and Islands Regional Technology Consortium offers 14 briefs on topics ranging from Strategies for Improving Academic Achievement and Teacher Effectiveness to Technology Type and Costs that provide advice on integrating technology into NCLB plans.
Guiding Questions for Technology Planning (www.ncrtec.org/capacity/guidewww/gqhome.htm)
With pages dedicated to topics such as garnering public support, implementing your plan, and evaluating the plan's implementation, the site provides support for the planning process.
Profiler Online Collaboration Tool (profiler.hprtec.org)
A free online tool that helps teachers assess their technology ability, share expertise, and learn from others. With this tool, they compile a technology profile to compare with other profiles to help a school or district create teams of experts, self-help groups, and other support systems. **Learning with Technology Profile Tool** (www.ncrtec.org/capacity/profile/profile.htm)
A profile tool to assess a school's use of engaged learning and integration of technology. Participants select the choice that describes their current practices, not their instructional goals. Comparing the two can help the staff understand how close they are to achieving their ideals.
Planning for Technology: Putting the Pieces Together
(www.edgateway.net/cs/tk/print/rtec_docs/tk_home.html)
The graphic is a colorful nine-piece jigsaw puzzle with labels such as District Planning, Technology Enhanced Instructional Units, and Integrating Technology with Standards. Clicking on any piece of the puzzle brings up links to rich resources.
Resources for Guiding Questions for Technology Planning
(www.netc.org/cdrom/guide/html/gqres.htm)
This site provides answers to common technology planning concerns such as supporting and providing a challenging curriculum, technology and the school's accountability and assessment systems, and providing professional development, training, and ongoing technical support.
Technology Planning Guide (www.apple.com/education/planning)
Apple Computer offers a comprehensive look at the planning process, from creating a vision for technology integration and evaluating your current status to writing a workable implementation plan. Visitors can use the eight-step process sequentially or as needed.
Learning Through Technology: A Planning and Implementation Guide
(www.ncrel.org/tandl/homepg.htm)
This site focuses on the various stages of technology implementation efforts and offers links to help planners deal with such topics as building a knowledge base, implementing priorities and strategies, evaluating the process, and institutionalizing technology.
A Guide to Technology Planning (projects.scrtec.org/~techplan/techplanguide.html)
Although much simpler in form and content than other sites, this guide offers a handy overview of the steps in the technology-planning process. Simple but effective as a guide, it can also be reproduced for handbooks for technology planners to consult.
Technology Planning Tools (www.nsba.org/sbot/toolkit/tpt.html)
Besides discussing technology planning and technology integration, the site offers links to the NSBA's Education Leader-ship Toolkit, a comprehensive look at the concept of educational reform. Thought-provoking analyses of the issues surrounding educational reform.
Technology Planning (www.seirtec.org/techplan.html)
Links to state, district, and school technology plans; a review of the literature related to technology integration by SEIR*TEC's director; experience-based tools for technology planning plus case studies; and a sample technology skills needs assessment.
Technology Program Evaluation (www.seirtec.org/eval.html)
Part of the excellent SEIR*TEC site, this page features links to a range of useful evaluation techniques and documents. The site is handy both for evaluating current levels of technology use or for adapting resources to a technology plan.